A Working Model towards Understanding and Enhancing House Design in Saudi Arabia

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بسم الله الرحمن الرحيم

In The Name of Allah, The Most Beneficent, The Most Merciful

To the light of my eyes, my parents, Muneerah and Faisal
for their prayers, blessings, support and unconditional love.
I hope this work compensates for all the years that set us apart.

To my beloved husband and best friend Mohammed, who shared
the challenging journey with me all the way.

To the joy of my life, my daughters Reema and Salma,
whose faces reminded me to smile every day.

Abstract

This thesis investigates the conceptual-design process of privately built houses in Saudi Arabia. The objective of the investigation is 1) to identify the constituents of Saudi residential architectural design; 2) to develop a theoretical explanation of the design process incorporating both the architectural practice and the associated socio-cultural phenomena; and 3) to develop a model for designing privately built houses. The aim of the developed model is to improve the design process and thus enhance design outcomes physically and socio-culturally in the context of Saudi Arabia.

In Saudi Arabia, the methods adopted in designing houses are in complete contrast to traditional methods and settings. At present, approaches in designing Saudi houses consists of an adapted Western concept of housing, combined with Saudi socio-cultural needs and inherited ideologies, which together create a distinctive approach to house design (HD). Therefore, the design of privately built houses (being predominantly villas) is viewed and investigated in this research as a phenomenon by means of Grounded Theory research methods. The data for this investigation were gathered through a number of sources, these being primarily field studies and interviews.

A substantial range of concepts and socio-cultural manifestations related to HD are identified and grouped under 23 abstract categories constituting the phenomenon of HD in Saudi Arabia. These findings were then developed into a number of research outcome forms: 1) a structure demonstrating the conceptual constituents of HD; 2) a conceptual model outlining the relationships between the identified categories; and 3) a substantive theoretical explanation of the HD phenomenon.

The research outcomes are then discussed in relation to a number of design theories, predominantly Christopher Alexander's architectural theory and the associated design system, A Pattern Language. Through the discussion, it was concluded that this research's outcomes could be referred to as The Pattern Language of Saudi HD. Consequently, the results were employed and developed further by adapting a number of existing design approaches to form a model for designing Saudi houses, namely the Saudi House Design Model (SHDM). The proposed model sets the foundations for a further complex design approach involving architects, users, socio-cultural dimensions, and the capacity for future changes as key aspects.

Acknowledgments

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Summary of Content

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Abbreviations and Acronyms

Acronym	Expansion
GT	Grounded Theory
GTM	Grounded Theory Method/s
GTR	Grounded Theory Research
HD	House design
MCI	Ministry of Commerce and Industry
MS-Word	Microsoft Word (software)
REDF	Real Estate Development Fund
SA	Saudi Arabia
SHDM	Saudi House Design Model
SR	Saudi Riyal (1SR ≈ 3.75USD ≈ 6GBP)

Arabic glossary

Arabic term	Meaning
Bawabh	The Arabic term used to describe a main entrance gate.
Dewaniah	A term used by people in the Eastern Province, while in other Saudi regions they may call it 'molhaq'. It refers to an external reception area mostly used by males; it is usually less formal than internal receptions.
Estiraha	A large one level hall/s with different facilities. Either privately owned or rented by day, it used for various events, e.g. weekend gatherings or weddings.
Majlis	Main reception room
Molhaq	A detached room built at the front of the house for casual use especially by males.
Qiblah	The direction Muslims should face when praying. It is fixed towards the Ka'abah in Makkah.
Salah	Living room, usually an open space used by the family members.

Chapter 1
Introduction

1. 1 Research problem and rationale

1.1.1 Research problem

This research investigates house design (HD) in Saudi Arabia (SA) and the associated socio-cultural phenomena and concepts. It identifies and explains the concepts constituting the HD process, by researching a variety of sources and consulting with the people involved in the conceptual design phase, both professionals and homeowners. Although the primary interest of this study focuses on houses (villas) that are privately built by its own occupiers/end-users, the investigation examined other residential forms, in order to establish a broader contextual understanding of the subject. The accumulated knowledge about the conceptual design process and the incorporated socio-cultural concepts generate the research outcomes, which are employed towards developing a HD model that aims to support and enhance HD in SA.

In Saudi Arabia, a sense of stability and security spread following its unification in 1932, this was shortly followed by economic prosperity after the discovery of oil in 1938. Combination of these major factors, along with other consequential factors, triggered changes to the socio-cultural context, thereby transforming the shape and meaning of architecture in the region (see Figure 1.1 and Figure 1.2).

New governmental institutions, such as planning agencies and municipalities were established, leading to new regulations and building legislation. As a result, vernacular builders were replaced by formally trained professional designers – mainly Western designers – during the early transformation stages (Eben Saleh 2001).

Today, there are hundreds of architectural firms around the country, and thousands of building permissions are granted every year (with the majority being residential), leading to enormous transformation in the architecture of traditional villages, towns and cities, and in some cases the loss of regional characteristics (Eben Saleh 1998b). In reference to this, there is a sense that continuity and the true interpretation of local identity is only weakly distinguished or understood in contemporary Saudi house designs, stirring many researchers to examine this issue (Al-Naim 2008; Mahmud 2007; Al-Hathloul and Mughal 1999; Eben Saleh 1998a).

Not only have local architectural forms and meanings dissolved in response to new design and building methods, but also "as with other nations in the region that have experienced such growth, it [Saudi Arabia] subsequently lost much of its architectural heritage in the process" (Steele 2010: 4). However, by the late 1980s, governmental and academic leaders raised the issue regarding lost heritage and searched for ways to conserve it (Steele 2010: 5). Researchers

expressed certain growing concerns about the Saudi architectural context in their PhD studies. For instance, Al-Naim, in 1998, cited over 16 PhD researches analysing subjects related to residential architecture in SA in addition to his own thesis.

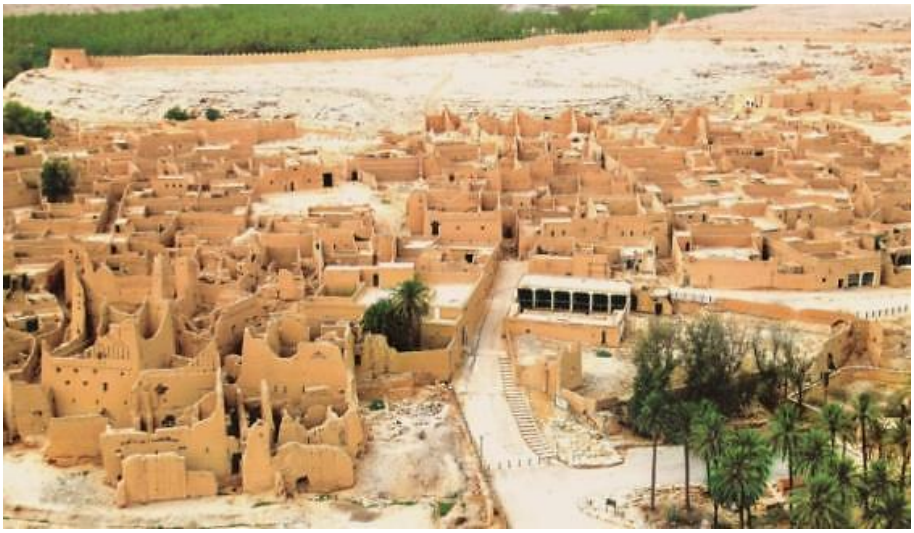


Figure 1.1 Vernacular architecture in Riyadh, Saudi Arabia
Source: ArRiyadh City Web Site 2010

Figure 1.2 The city of Riyadh, Saudi Arabia nowadays
Source: ArRiyadh City Web Site 2010

Notably, organisation of *The First International Conference for Urban Heritage in the Islamic Countries* revealed a stronger governing interest in the architectural context. The conference was held in Riyadh, the capital of SA, in May 2010, and was sponsored by the Saudi Commission for Tourism and Antiquities (SCTA) who are demonstrating a strong focus on

traditional heritage and seeking long-term strategies to protect it. One of the conference's main objectives was to highlight the importance of cultural, economic and social factors in urban and architectural heritage, as a key area of development in Islamic countries (Anonymous 2010).

Studies examining Saudi architecture, whether in the form of doctoral dissertations or journal articles, may be classified into two conceptual categories: 1) traditional and contemporary Saudi architecture; or 2) thematic studies on Saudi architecture. The first group includes the vast majority of the studies that were produced in response to absolutist changes in the form and setting of the built environment; they extended to its impact on social and behavioural contexts.

The theme in such studies was to track changes, mainly in the residential sector, through pursuing a chronological trail of three architectural periods:

1. The traditional period, prior to the 1950s;
2. The transitional period, between 1950 and 1970; and
3. The contemporary period from the 1970s onwards, when villa type houses became well-established and traditional buildings were mostly abandoned.

In the course of these investigations, researchers argued and discussed changes in building form, content and setting, i.e. physical elements, e.g. Alharbi (1989). However, the majority associated physical analysis of buildings with selected variables; e.g. lifestyle and social needs (Al-Wafi 2006), the role of women in design (Al-Nafea 2006), identity (Al-Naim 1998; Eben Saleh 1998b), the meaning of furniture in the domestic space (Akbar 1998), and building regulations (Salagoor 1990).

The second group of thematic studies on Saudi architecture covered miscellaneous related subjects, for example, environmental/energy variables (Al-Naimi 1989), sustainability (Taleb and Sharples 2011), economic aspects (Sidawi 2011; Opoku and Abdul-Muhmin 2010), or particular elements of buildings such as doors and windows (Akbar 2000). Most studies focused on certain areas/cities in SA.

More recently, Al-Solaiman (2010) shed light on different research areas, as affected by Saudi architecture. She investigated the recent architectural history of public buildings in Riyadh, the capital of SA, using a more holistic approach than found in previous studies. Although extensive effort was put into accumulating and interpreting architectural discourse and valuable information and lessons could be drawn from the content, the beneficiaries of such studies are primarily scholarly researchers and higher governmental planning sectors. In contrast, general architectural practising bodies are more likely to dismiss such holistic studies.

Collectively, research on Saudi architecture has encompassed descriptive, analytical and critical studies of traditional and contemporary architectural entities, offering rich historic documentation of the built environment and connotative meanings within discourse. Such studies also developed theoretical frameworks, whose objective was either to explain phenomena or to suggest design approaches and methods; or to suggest solutions for certain issues (including design approaches). Previous studies (e.g. mentioned above) offered extensive background knowledge regarding the residential context in SA, which assisted the researcher in identifying the gaps in existing knowledge and helped in forming researchable questions.

On the other hand, changes in the built context as well as the socio-cultural fabric in SA are becoming increasingly difficult to track and analyse for research purposes; meanwhile they are difficult to ignore. This contradiction forces attention on the need to develop new approaches to studying, understanding and providing solutions to current problems and avoiding any possible future problems. New approaches will undoubtedly support the notion of socio-cultural sustainability and consequently assist in the creation of a more sustainable built environment.

Architectural design practice and its underlying process/es in SA have not attracted researchers' attention. This may be a result of the sensitivity of the area along with other aspects of the research culture in SA, as interfering in people's home life or work is barely acceptable (if not wholly unacceptable) due to the conservative nature of society. Therefore, examining the context, process/es and factors influencing residential design in Saudi Arabia, and recommending methods towards enhancing them is vital, not only in this research but also to create a base for future studies and developments.

Having reviewed the available literature, the researcher could not uncover any Saudi (or other) studies examining ongoing/current architectural designing activities, aside from one master degree thesis (Al-Mohaimeed 2009) (see Chapter 2: section 2. 18). In her study, Al-Mohaimeed examined the design process and barriers facing it within Saudi architectural offices, with the objective of documenting the process and improving it through object-oriented simulation. However, she investigated the process in technical terms within the offices' structures without involving clients or the general settings surrounding the projects. Nor did she include processes applied in the residential domain, as these mainly focused on large-scale projects.

Generally, studies investigating architect–client relations are scarce. They mainly exist as part of the design management discipline, targeting special or large projects, not average and more common private house designs. However, studies that do demonstrate further focus on clients/users as part of the design process can be found more extensively in studies about, for

instance, human-centred design approaches, which have a strong focus on users, or interactive design, where users are engaged in the design process as designers. Both approaches/methods are usually associated with product design or communal/community projects. Therefore, further emphasis on this important and dynamic aspect of HD (i.e. the user) is central in improving the practice.

However, focusing on extracted elements of the HD process in isolation from its contextual settings, would lead to a failure in delivering a full understanding of existing issues and their causes. As a result, any proposed design model aiming to improve the design of houses will not be comprehensive or effective enough, as it will offer partial solutions to what are interlinked affairs.

Therefore, first, the design of privately built houses in SA need to be thoroughly understood through a holistic investigation approach i.e. an approach that allows the emergence of ideas, concepts and information in oppose to a predetermined list of enquiry. Then accordingly, a design model that can tackle the identified issues can be developed.

Nevertheless, SA as a region, shares many attributes with its neighbouring Gulf countries in terms of architectural development and socio-cultural characteristics (and most probably with other rapidly developing countries globally), the examined phenomenon (privately built houses) can be found in different places in the region; therefore, studies carried out in SA can benefit other contexts in which the phenomenon occurs on a similar or smaller scale.

1.1.2 Why privately built houses?

The value of studying residential architecture originates from a number of factors; foremost, it encompasses the majority of the built environment, it also significantly affects economic and social factors which makes it of "great interest to users…[and] researchers" (Rapoport 1985: 255). Homes in general play a crucial role in shaping individuals' characteristics and the overall community of which they are a part, configuring groups' history and their anticipated futures. The privately built home "is quite unlike the majority of material culture possessions: it is conceptualized by the "end-user"…[it] is often a joint, if not family-made project; and reflects the social world as other homes do" (Brown 2007: 262). Houses represent various cultural dimensions philosophically and visually, and speak of unspoken narratives (Brown 2007). The designs of house' layouts are a result of "socio-cultural values, customs and practices" (Chiu 2004: 75). Indeed, residential projects play a substantial role in the sustainable development of

cities (Chiu 2004). These factors combine to make this research highly significant for this type of architecture, i.e. residential architecture.

Meanwhile, privately built houses, i.e. villas designed and built by individuals for their own use, were chosen here precisely because of their ratio in comparison with other residential architectural forms or types in SA. More significantly, privately designed/built houses are projects where socio-cultural manifestations are most clearly expressed during the design process, since the debate involves the actual users: this contrasts with bigger developments and housing projects, for instance, where representatives act in lieu of anticipated future users. Nevertheless, other residential forms and types were explored throughout the investigation stage, to help verify the findings and understand the variables.

1.1.3 Researcher's personal motivators

The researcher had an interest in traditional/regional architecture during her formative years studying interior architecture, which was demonstrated in the design of a contemporary department store as she used local Najdi style (i.e. that of Saudi Arabia's central region). This was the first and only attempt the researcher had to experience innovative design adapting regional concepts; although the effects of tradition were the focus of her scholarly studies during her Master's in architectural engineering. The connection between this subject and Islamic architectural studies has provided a clearer platform from which to explore the subject and approaches used by professionals when examining it. In 2005 the researcher submitted a dissertation entitled, 'The Art of Ornaments in Traditional Architecture: Its Continuity in Contemporary Architecture of the Eastern Province of Saudi Arabia: A Descriptive Analytic Study' (Al-Faisal 2005).

The researcher's interest in the subject increased at this stage, and during her work as a lecturer at the Department of Interior Architecture in King Faisal University (now the University of Dammam). She suggested the use of traditional Islamic and regional concepts and styles for the design of a complex consisting of a bazaar, a mosque and the surrounding landscape: the experience and results were inspiring on many academic and professional levels (see the article 'Recycling Traditional Designs: A Practical Approach' by Al-Faisal (2009)).

Later on, when applying for a PhD programme a number of questions emerged, and it became evident that the majority of previous researches had either provided a descriptive or critical approach to existing forms of architectural settings. Very few studies, if any, had argued about the actual design practice that had developed them, or ways of improving the design process to

achieve better results. Some studies developed conceptual frameworks for improving approaches, but these were intended as general architectural approaches and did not focus on designing houses or consider the design process in itself.

There was a clear gap; however, there was no definite idea about the methods that could be used to fill this gap. This created a challenging task for the researcher, and an exciting one; a task aimed at initiating some kind of system that could incorporate traditional design concepts and the socio-cultural concepts associated with contemporary architectural designs. To narrow down the scope, the researcher selected residential design practices (reasons explained earlier). As a result, this research was devised with a clear vision of its future path, a vision to develop a design model that can enhance design processes; processes that could help to produce efficient house designs that not only offer functionally satisfying layouts and aesthetically appealing views, but also socio-cultural sustainability to its society.

1. 2 Research aim, objectives and questions

This research aims to **develop a working model that can assist in enhancing the conceptual design process of privately built houses in SA**. This aim is achieved by accomplishing the following objectives:

1. To review current and available design approaches and relate them to the examined subject;
2. To understand the context of Saudi residential design practices and the processes involved;
3. To identify the constituents of Saudi residential architectural design in order to develop a conceptual model outlining the relationships between the identified categories;
4. To form a substantive theoretical explanation of the phenomenon.

The main research question addressed by these aims and objectives is: **what constitutes the phenomenon of privately built houses in SA and how can the conceptual-design process be enhanced?** The other addressed questions are:

1. What are the socio-cultural concepts and phenomena associated with house design?
2. What is the process of designing a privately built house, who is involved, what factors influence design decisions, and how does it differ from that of other residential project types?
3. What issues are associated with the conceptual-design process of privately built houses and how can they be avoided in the developed model?

Table 1-1 below, briefs the relationship between this research's objectives and questions and between the consequential outcomes.

Table 1-1 Research objectives and questions, and the consequential outcomes

Objective	Research question	Relevant material and outcome
To develop a working model that can assist in enhancing the conceptual design process of privately built houses in SA.	▪How can the conceptual-design process be enhanced? ▪What issues are associated with the conceptual-design process of privately built houses and how can they be avoided in the developed model?	▪In Chapter 6, section 6. 4: the development and design of the SHDM fulfills the aligned objective and the related research questions. ▪Chapter 4, section (T2) 9 (p. 245) explains about the impediments (issues) facing the development of HD in SA.
To review current and available design approaches and relate them to the examined subject.	▪How can the conceptual-design process be enhanced?	▪In Chapter 2, the examined context and the available design approaches are reviewed in order to identify the available and possible HD solutions.
To understand the context of Saudi residential design practices and the processes involved.	▪What constitutes the phenomenon of privately built houses in SA? ▪What is the process of designing a privately built house, who is involved, what factors influence design decisions, and how does it differ from that of other residential project types? ▪What are the socio-cultural concepts and phenomena associated with HD?	▪In Chapter 2, Section 3, the architectural context of SA is examined through literature. ▪In Chapter 4 i.e. the research findings, the constituents of the investigated phenomenon are identified and explained. In them, all the related processes, stakeholders and the incorporated socio-cultural phenomena are explained.
To identify the constituents of Saudi residential architectural design in order to develop a conceptual model outlining the relationships between the identified categories	▪What are the socio-cultural concepts and phenomena associated with HD? ▪What is the process of designing a privately built house, who is involved, what factors influence design decisions, and how does it differ from that of other residential project types?	▪In Chapter 5 i.e. the research outcomes, the constituents of the investigated phenomenon are formed into thematic structures and a conceptual model explaining the relationships between the identified categories.
To form a substantive theoretical explanation of the phenomenon	▪What constitutes the phenomenon of privately built houses in SA?	▪In Chapter 5 i.e. the research outcomes, the constituents of the investigated phenomenon are formed into a substantive theoretical explanation of Saudi Arabia's privately built houses.

1. 3 Research methodology

As the research gap was identified and the problem became well defined, it became clear that Grounded Theory (GT) was the most appropriate research methodology to follow. GTR is a qualitative and inductive methodology adopted for investigating phenomena and producing theories that are grounded in data (details in Chapter 3).

Houses being designed and established individually through their own occupiers (i.e. not through professional builders or developers) is not a traditional approach in SA (explained further in Chapter 2: Section 3), neither is it the common approach in the countries that have influenced modern architecture in the region. Therefore, and since there is not a full explanation of the subject (privately built houses); it is being perceived in this research as a phenomenon[1]. Through its methods, GT research (GTR), allows concepts to emerge, unlike other qualitative methods with set variables. This approach supports the aim towards understanding the phenomenon as it occurs, which minimises any presumptions a researcher may impose on the investigation.

On the other hand, the development of a theory is an essential aspect in this investigation, for this, the findings are developed to establish a theoretical explanation of the phenomenon. This theorising attempt of the phenomenon will offer a more abstract explanation of it constituting concepts and their relationships to one another. However, developing theories out of design practices is "one of the deep problems in design research" (Friedman 2003: 519). Friedman (2003) explains this as he states that:

> "Designers often confuse practice with research. Instead of developing theory from practice through articulation and inductive inquiry, some designers simply argue that practice is research and practice-based research is, in itself, a form of theory construction. Design theory is not identical with the tacit [experiential] knowledge of design practice. While tacit knowledge is important to all fields of practice, confusing tacit knowledge with general design knowledge involves a category confusion." (Friedman 2003: 519).

Some professionals, and people with architectural experience in the examined context, may claim that they have an adequate understanding of privately built houses in SA. They, therefore, may believe that theorising architectural phenomenon is unnecessary. Conversely, the absence of scholarly work that documents phenomena based on methodologically gathered data reduces the opportunities of forming hypotheses that motivate researches. Hypotheses, on the other hand, are formed through theories, then tested for validation, and the findings then formulate essential factors that assist in delivering developments in the field under examination. This notion corresponds with Friedman's (2003: 522) assertion, in relation to some designers who believe that theory-based design "robs design of its artistic depth", he disagrees with this

[1] A phenomenon is "something (such as an interesting fact or event) that can be observed and studied and that typically is unusual or difficult to understand or explain fully" (Merriam-Webster n.d.).

approach, stating “I believe that a study of design based on profound knowledge embraces the empirical world of people and problems in a deeper way than purely self-generated artistry can do” (Friedman 2003: 522).

Therefore, overlooking or neglecting any aspect of a phenomenon’s structure will without doubt affect the value of the processes within it (Friedman 2003: 515), causing it to become an undervalued process, which corresponds to the holistic approach this research is undertaking.

Thereafter, this research investigates privately built houses in SA as a phenomenon, it explores the professional practice surrounding the conceptual design stage, as well as, socio-cultural concepts and phenomena within the phenomenon. The data is gathered from the variety of residential development stakeholders with no extra attention on a specific category, this is applied by following the theoretical sampling method associated with GT researches (explained in section 3. 4). The outcomes then are employed to establish a Saudi house design model (SHDM) that aims to enhance the design of privately built houses.

1. 4 Research framework

This research aims to understand the constituents of Saudi residential architectural design as a holistic phenomenon. In order to achieve this, the researcher had to approach the subject with an open mind, to allow the emergence of concepts related to the phenomenon, rather than fixing a set of variables to examine; this is central to grounded theory research (GTR). The initial approach for performing the research was qualitative (reasons explained in Chapter 3: Research Methodology). Subsequently, as the research objectives became clearer and the structure was identified, a more appropriate methodology was selected, i.e. GT. Grounded Theory details a set of suggested methods for data gathering and analysis; moreover, it offers methods and guidance to establish and form outcomes. Therefore, the research framework was formed to allow the research questions to be answered by applying the selected methods. Figure 1.3 illustrates the framework in terms of strategy, data-gathering methods and the investigation process, whereas the following figure explains the thesis structure.

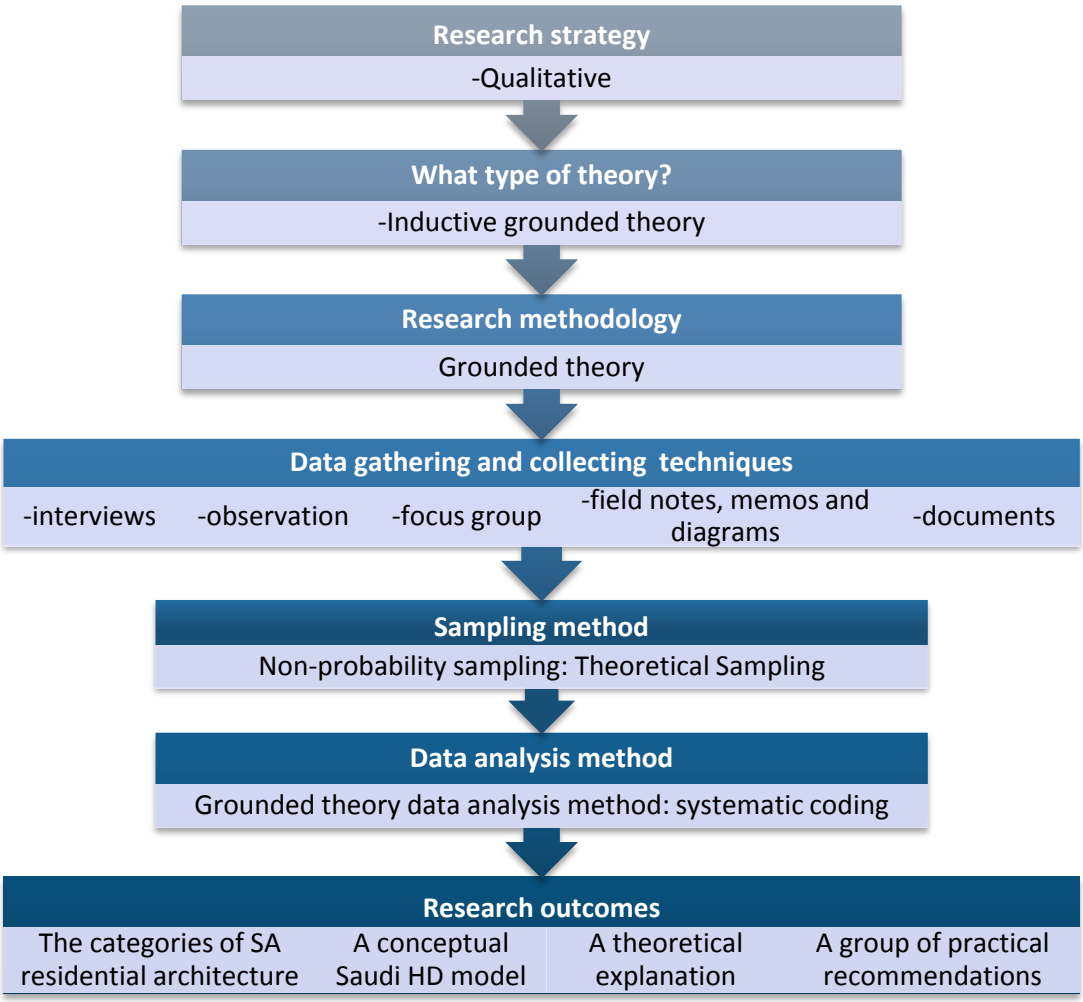


Figure 1.3 Research framework

1. 5 Thesis structure

Figure 1.4 illustrates this research's structure.

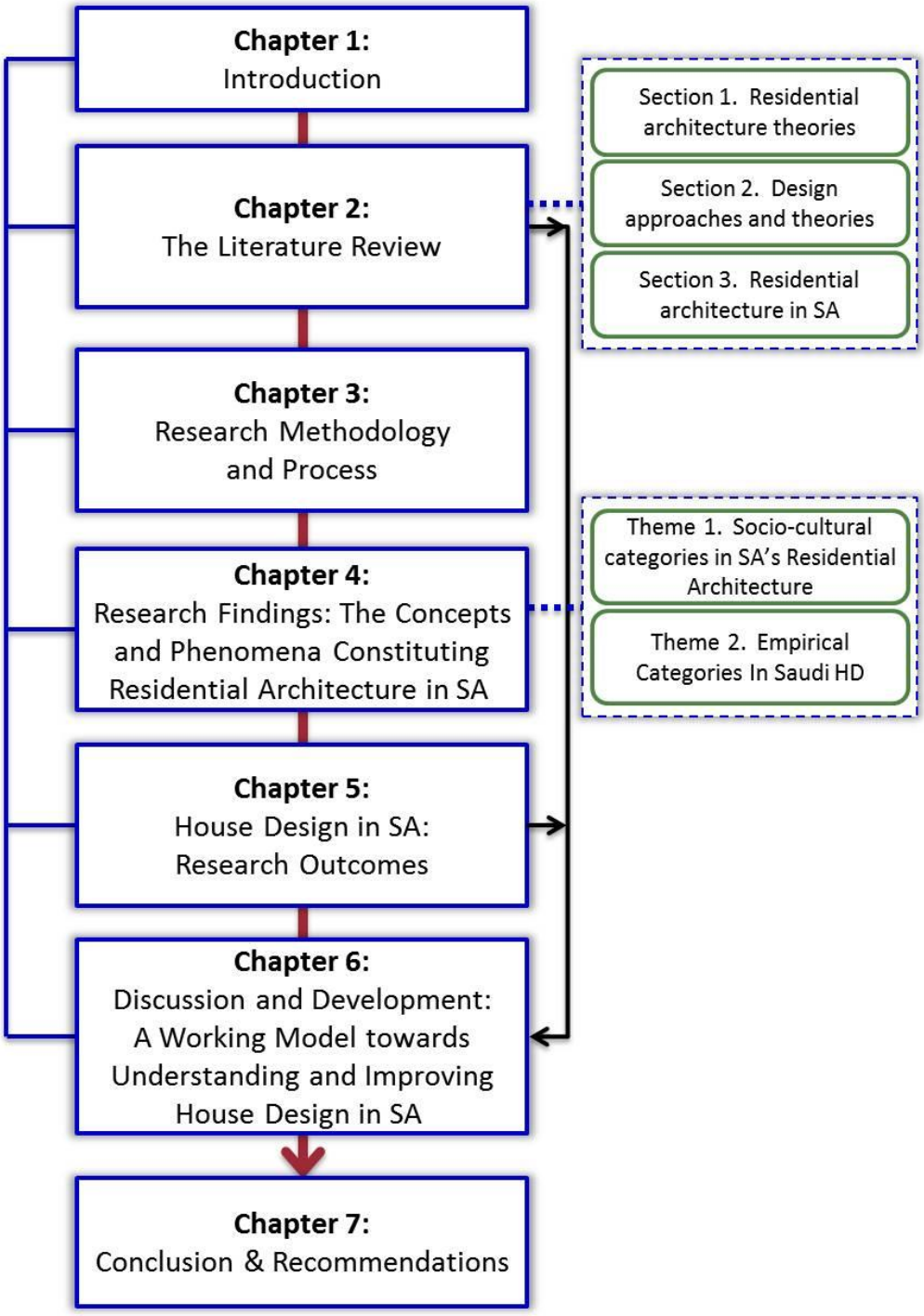


Figure 1.4 Thesis structure

Chapter 2
Research Background:
House-Related Theories, Design Approaches and Architecture in SA

2. 1 Introduction

This chapter will present a comprehensive review concerning the main dimensions found in residential architecture. It aims to establish background knowledge of the examined subject. The review is divided into three sections, each focusing on a central area. The first section contains a discussion of the definitions and arguments in relation to the meanings encompassing residential architecture. The second section reviews the empirical aspects of design, followed by a discussion of architectural and other design approaches and processes from different fields, in order to gain a broader understanding of the subject. The third section explores architectural paradigms and the context of the examined area, namely Saudi Arabia. Figure 2.1 illustrates in further detail the content and structure of the review sections.

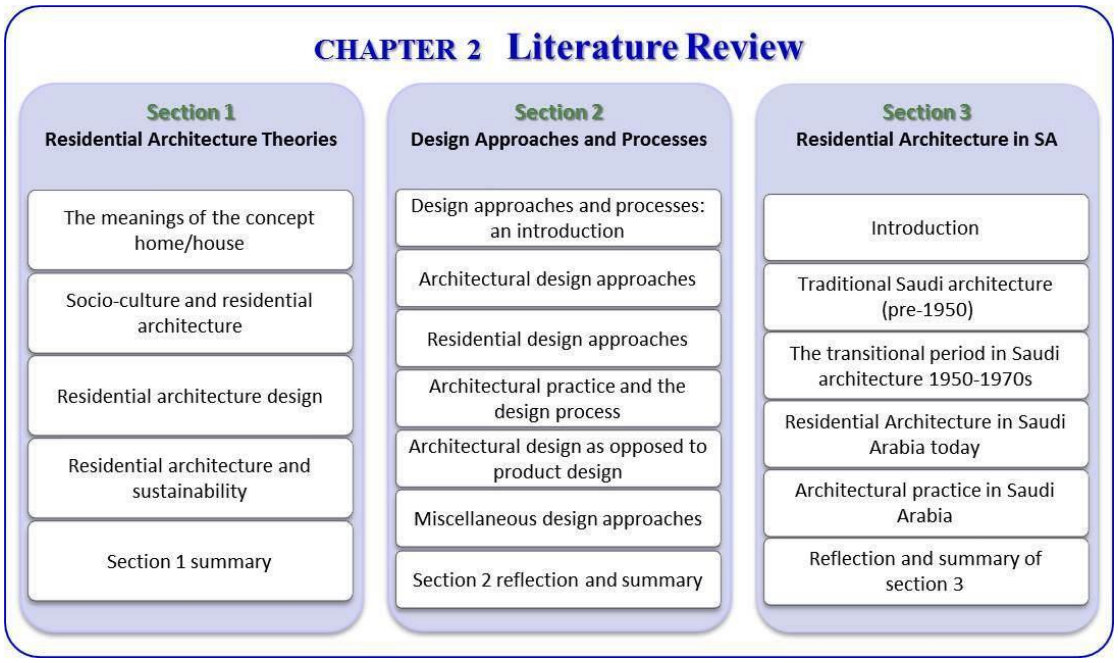


Figure 2.1 Chapter two content and structure

In accordance with grounded theory (i.e. the methodology followed in this investigation: Chapter 3), the literature review is used during the early stages of an investigation to: "enhance theoretical sensitivity; as data during analysis; and as a source of theoretical codes" (Birks and Mills 2011). Accordingly, two phases of a literature review have been applied during this research. The first was a broad review that examined the variety of design-related subjects, along with the literature concerning regional and Islamic architecture. The second review phase focused on the concepts, phenomena and variables generated through the investigation. This process has provided the researcher with a comprehensive view of the subjects that have been examined in architectural studies and the approaches used. It has also offered a general

understanding of the concept of ‘design’: the way it has been reviewed by theorists, practitioners and scholars in general, including which subjects have been under scrutiny and the means by which issues have been approached and resolved.

The outcome of the review has enhanced the researcher’s sensitivity (see section 3.2.3) during the empirical investigation, the data analysis process and during the theoretical integration and discussion stages. This has intensified the ability to identify and interpret symbolic, minor/secondary details, issues, alternative solutions and metaphoric meanings of concepts and phenomena. However, it should be noted that the literature review was undertaken from the perspective and background of an architect and (along with the remainder of the study) is presented mainly for architectural purposes and readers with an architectural interest.

2. 2 The meanings of the concept home/house

Interest in the concept of home/house is exhibited in dedicated scholarly journals, e.g. 'Home Cultures' and a wide range of publications that examine physical and behavioural aspects that relate to house formation, use or settings. Reviewing the different definitions and the variety in approaches towards identifying the meaning of homes/houses, helps in understanding the other settings, contexts and variables associated with this physical architecture that is being examined in this research.

The word 'house' denotes "a building for human habitation, especially one that consists of a ground floor and one or more upper storeys", whereas, 'home' refers to "the place where one lives permanently, especially as a member of a family or household" (Oxford-Dictionaries n.d.). Although some slight variations may be found in definitions of the terms, these are better explained and understood according to their connotative meanings, which incorporate human aspects within the explanation/description. The following paragraphs review these meanings in reference to the existing literature.

Rapoport (1969) views the house as "an institution, not just a structure, created for a complex set of purposes" (1969: 46). He associates the creation of a house with cultural phenomena; noting that its design reflects the cultural setting within which it is created. Homes are seen to provide both individuals and families "with all three territorial satisfactions", these are "identity, security, and stimulation" (Porteous 1976: 1). Moreover, the rich meanings of home continue to be "centred on family and kin relations, nostalgia, national pride and lifecourse events." (Lam and Yeoh 2004: 158). Nevertheless, it is essential to realise that:

> "Not all home occupiers experience these positive elements of identity, security, and stimulation. When home becomes a place of danger, the positive associations of home: as a place of safety, of security, of control over oneself and one's environment; become subverted, and the effect can be psychologically very damaging." (Fox 2002: 593)

This corresponds with Lam and Yeoh, who comment that home can be "a place in which one does not prefer to live in" (2004: 158).

In a more classified manner, when discussing the meaning of home, a number of theorists have developed lists that from their perspective encapsulate the broad meaning of home. The first

inclusive list describing the meaning of home was presented by Hayward: "home as physical structure; home as territory; home as locus in space; home as self and self identity, and home as a social and cultural unit" (Hayward 1975 cited in Moore 2000: 210). Whereas, Tognoli identified five attributes that distinguish a home from a house: centrality; continuity; privacy; self-expression and personal identity; and, social relationships (1987 cited in Moore 2000: 210). Subsequently, in 1991 a further comprehensive list of ten categories explaining the meaning of home from both psychological and social/cultural perspectives was produced by Després (1991 cited in Moore 2000: 210).

Taking a different approach, Moore (2007, 2000) studied both the concept of home and homelessness from the perspective of environmental psychology. She suggested that both concepts are integrated and overlap; moreover, "it is possible to be homeless and at home at the same time, as home has more to do with a state of mind and an emotional engagement than it has to do with a fixed place" (Moore 2007: 150). In her review of the meanings of home, Moore (2007) argues that literature (regarding the concept of home) has focused on the cultural contexts and variables that relate to the experience and use of homes, with the objective of developing theoretical frameworks (see section 2.3.1 for examples) rather than "core sites of meaning" (2007: 207). Therefore, she stresses "the need to draw together the personal and the cultural" (2007: 207). Moor's argument can be related directly to this research's interest, which aims towards producing homes that correspond to the needs of individuals that will live in them rather than homes that reflect general cultural requirements. Therefore, this aspect acts as a key feature in the developed design model presented in Chapter 6.

With a similar approach to Moore's, Easthope (2004) studies the meaning of home through reviewing literature on the concept of 'place'. He demonstrates how home is viewed as "a socio-spatial entity, a psycho-spatial entity and an emotional 'warehouse'" (2004: 134). Easthope states that:

> "It is not the physical structure of a house, nor is it the natural and built environment of a neighbourhood or region that is understood to make a home. Rather, it is when such spaces are inscribed with meaning that they also become homes. Hence, homes are 'places' that hold considerable social, psychological and emotive meaning for individuals and for groups." (2004: 135)

Easthope also describes home as an "open place", in the sense that it is influenced by social relations that "stretch beyond it" (2004: 136).

The meaning of home/house has also been explained in accordance with its temporal aspects (Werner et al. 1985). A more recent study based on an ecological perspective (Coolen 2006),

deviates from the holistic approach to exploring the meaning of home, to a more focused study of the features and separate settings of a dwelling. Coolen states that "the meaning of a dwelling is believed to lie in the relationships between the features of the dwelling on the one hand and people's goals and intentions on the other" (Coolen 2006: 200). The study process is reasonably systematic in comparison with that in earlier studies, examining definitions of home in a more theoretical sense. It (the investigation process) involves examining certain features of a dwelling in terms of what the occupiers do or want to do in it, through means of interviews. These accumulated functions are what constitute the *meaning structure* of the dwelling. These functions can be divided into two types in accordance with the framework presented in Table 2-1. In order to measure the meanings structure, three phases were followed:

> "1. elicitation of the salient dwelling features;
>
> 2. elicitation of the (preferred) levels of the salient dwelling features;
>
> 3. measurement of the meaning structures." (Coolen 2006: 190)

Table 2-1 Conceptual framework for studying the meaning of dwelling features
Source: Coolen (2006: 190)

Framework	Example
Latent functions	Privacy, social contacts
Manifested functions	Space, activities
Dwelling features	Number of rooms

2. 3 Socio-culture and residential architecture

> "The emerging meanings of architecture, like those of all other cultural practices, may lie far from the architects' intentions and may borrow their content from a variety of unforeseen socio-cultural contexts." (J. Traganou 2008 cited in Traganou 2009: 174)

Although many studies that examine residential architecture in combination with human behaviour use the term 'culture' to describe the area of study, they in effect implement socio-cultural variables that comprise part of the concept of 'culture'. Since culture in itself is a broader concept (Hofstede and Hofstede 2005), it represents a larger meaning, associated with a wider range of variables, such as art, language, and even food, none of which are embraced in architectural studies claiming to involve culture; hereafter, it is better to refer to this as socio-culture. The following sections will elucidate both terms further. The accumulated knowledge is essential in establishing a clear understanding of the terminologies adopted in this study. Moreover, the socio-cultural variables discussed in literature will enhance the researcher's

theoretical sensitivity when examining and analysing the gathered data in later stages (see section 3.2.3, point number: 6, p. 89).

2.3.1 The wider perspective: 'culture'

Hofstede and Hofstede (2005: 400) define culture in two ways: "1) the training or the refining of the mind; civilisation [and] 2) the collective programming of the mind that distinguishes the members of one group or category of people from another". They elaborate further by describing the members of these groups or categories, stating that:

> "Almost everyone belongs to a number of different groups and categories at the same time, we unavoidably carry several layers of mental programming within ourselves, corresponding to different levels of culture." (Hofstede and Hofstede 2005: 10-11)

Figure 2.2 demonstrates these cultural levels:

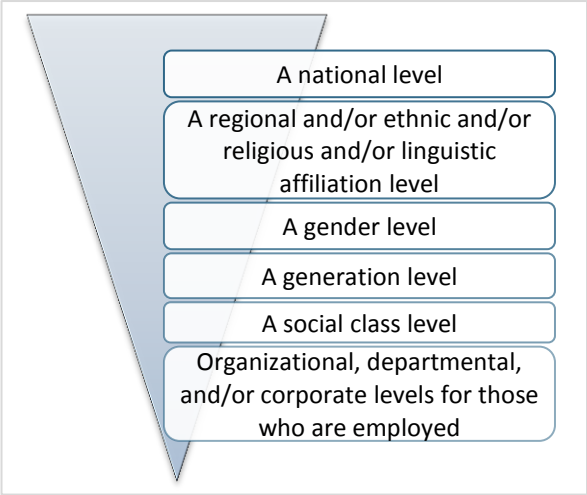


Figure 2.2 Cultural layers
Source: Adapted from Hofstede and Hofstede (2005: 11)

However, this mental programming of the levels, conflicts partially with modern societies, for example:

> "Religious values may conflict with generation values or gender values with organizational practices. Conflicting mental programs within people make it difficult to anticipate their behaviour in a new situation." (Hofstede and Hofstede 2005: 11)

The explanation offered above contributes to our understanding of the variations found in the residential design requirements especially in the context of SA. It also helps the architect to

identify and then understand the source/s, or in other words the *cultural level/s*, that determine each member's choices, which will help to shape the design of his/her future house.

Therefore, according to Rapoport:

> "The specific characteristics of a culture…need to be considered since they affect housing and settlement form; this includes the subtleties as well as the more obvious or utilitarian features. It is often what a culture makes impossible by prohibiting it either explicitly or implicitly, rather than what it makes inevitable, which is significant." (1969: 47)

Similarly, Chiu (2004) suggests that culture should cover three major aspects: 1) aesthetic and artistic aspect; 2) the fostering of mind and spirit; 3) the anthropological domain, that is "the way of life; and it pertains to the social aspect of human behaviour…It includes morals, values, laws, codes, customs, traditions, heritage, life styles and the ways we socialise within specific social structures" (Chiu 2004: 67). The three aspects mentioned above interrelate and influence each other in different ways. Nevertheless, considering these aspect when trying to understand the Saudi culture will assist in providing house designs that are more reflective of it culture.

From 1997 onwards, Rapoport (2008, 2006, 2005, 2001, 1998, 1985) gradually developed an explanatory theory and model, whereby he *dismantles* culture and relates its components to the built environment, or more precisely, environmental behaviour studies (EBS) (Figure 2.3). He suggests that 'culture' is too broad a concept and too general (i.e. universal) to be related to housing directly (Rapoport 2001; 1998). Instead, he proposes the concept of *dismantling* 'culture' into variables that can be related simply and directly "to housing, housing choices and preferences, group differences, etc." (Rapoport 2001: 145). Rapoport advocates the benefits of these variables, as they enable analysis and synthesis of available housing studies from various places and periods, and therefore make understanding and relating them much easier (Rapoport 2008; 2001; 1998), which is an essential part in this research's process. Rapoport intends the model as a 'vernacular' approach to designing architecture, particularly with regard to housing.

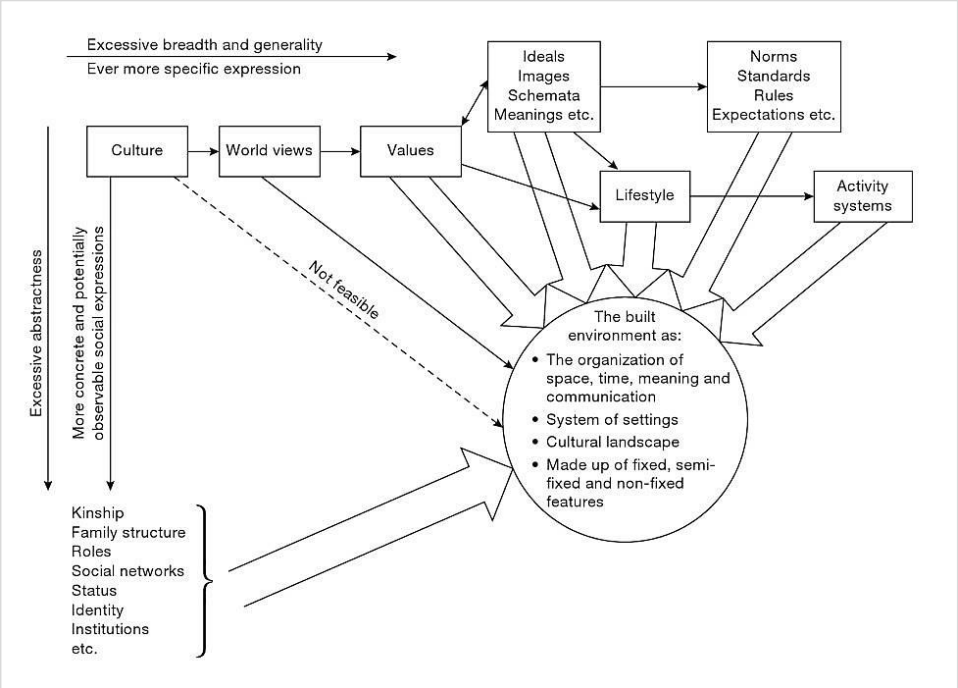


Figure 2.3 Dismantling culture, relating its expressions to the built environment
Source: Rapoport (2006: 193)

This approach has been widely examined in those scholarly studies concerned with the production of culturally sensitive housing designs (e.g. Hadjiyanni and Helle 2009; Das 2005; and Chiu 2004). Mitcham (2005) emphasises how "the vernacular house is vanishing", whereas, Chiu (2004: 75), for example, stated that the conservation of traditional buildings supports cultural continuation. Moreover, designing houses based on a combination of traditional and contemporary culture "enriches and sustains the cultural identity of a place" (Chiu 2004: 75). Since studies on Saudi architecture have argued the negative impacts new building methods and systems have on sustaining the Saudi cultural identity (see section 2.3.3), this approach, if adapted properly and methodologically, may help in reversing the current direction of architectural design in SA.

Alternatively, Triandis (2004) proposes a classification approach to manage cultural variables: 1) objective culture, e.g. chairs, tools, and vehicles; and 2) subjective culture, e.g. categories, norms and values. However, no explanation demonstrating how this classification can be useful was presented.

2.3.2 Culture vs socio-culture

In the previous section, the concept of 'culture' was examined; it became apparent that culture is a broad concept that needs to be dismantled if considered in this way. Moreover, culture refers

to the *ideational* variables that construct the variables of 'socio-culture' (see Table 2-2), these variables "can be visibly related to built environments, whereas "culture" cannot" (Rapoport 1998: 8). The following section reviews some of the most common socio-cultural variables found in architectural studies.

2.3.3 Socio-cultural variables in residential architecture

Identity

Burke and Stets (2009) define identity as "the set of meanings that define who someone is when one is an occupant of a particular role in society, a member of a particular group, or claims particular characteristics that identify him or her as a unique person" (2009: 2). In this sense, identity "is both about what makes us similar to other people, and what makes us dissimilar" (Hauge and Kolstad 2007: 275). Nonetheless, Jenkins (2008) declares that identity is "a process – *identification* – not a 'thing'. It is not something that one can *have*, or not; it is something that one *does*" (2008: 5).

Identity has been central to the discourse of architecture. Easthope (2004) remarked on how a number of theorists have declared "the relationship between people and places influences the identities of individuals and groups" (2004:137). Equally, "a place or neighbourhood can be seen as a social entity or 'membership group' that provides identity" (Hauge and Kolstad 2007: 276). Not only this, but "a particular neighbourhood is often associated with a certain lifestyle and social status" (Hauge and Kolstad 2007: 276). Houses in particular are of "importance in communicating identity" (Abu-Ghazzeh 1997: 247).

Hauge and Kolstad (2007), studied communicative aspects of the physical environment by investigating residents' thoughts about their homes as an expression of 'identity', the study was applied in two Norwegian neighbourhoods. In their article, they presented a thorough review of literature that mainly explored topics about identity and homes, symbolic interactionism and self-presentation, and about social identity. In their review they mention that the relationship between identity and homes often refers to a process, rather than an established structure (2007: 273), which corresponds to Jenkins (2008) declaration about 'identity' (presented earlier in this section). Additionally, they argue how (from a 'symbolic interactionist' perspective) symbols are used for 'self-presentation', which is a concept also found in housing contexts. Under the criteria 'self-presentation', people show a selected image of their selves to others and also to themselves (Myers 2002, cited in Hauge and Kolstad 2007: 275), this can be done in an objective and/or a subjective manner, i.e. through objects or behaviour.

In an alternative context, Mahgoub (2007) examined the reciprocal relationship between identity and the built environment in Kuwait to represent the architecture in some of the Arabian Gulf's cities, there is a close link between this study and elements of the current research and so a comprehensive review of it is presented here. Mahgoub used the term 'hybrid identity' to refer to the "hybrid nature of identity". He focused on four dimensions of identity that reflect this hybrid character. These were time; place; culture; and change. In an argument regarding the need to express local identity, he stated that "the identity expressed through the use of traditional style is viewed as a defence mechanism against the domination of the sweeping identity of globalization" (2007: 75) (see (Mahgoub 2004)). Furthermore, when comparing architects' and non-architects' views in relation to representations of identity through architecture, he found that they differed significantly (see (Mahgoub 2010)). Architects believe that architecture reflects "contemporary culture and lifestyle" and that clients play an important role in motivating the architect to design a building that reflects local identities. Whereas, non-architects considered the production of such buildings to be the architects' responsibility. Nevertheless, non-architects also argued that local identity in architecture was presented in traditional buildings and environments alone, i.e. not in reference to contemporary architecture (2007: 77). On the other hand, buildings designed in correspondence to what the author referred to as "identities of resistance" (2007: 80) were criticised by architects and critics for merely 'copying-and-pasting' elements from traditional architecture as a simple approach to reflect the local identity. "They argue that architecture should focus on new building functions, materials, methods of construction, technology should not be concealed by facades that are copied from the past" (2007: 80). This was stated in relation to a sense of national cultural identity; however, concerning individuals' identities, these are represented architecturally in privately built houses/villas. This corresponds with Brown's (2007) declaration that "the process of making a self-build home offers a unique opportunity for identity formation and the expression of autobiographical narrative content through material form" (2007: 270). The common approach then, according to Mahgoub, would be to hire a "low-budget" architect who often come from Arab or Asian countries, and they, as the author stated, "do not have any interest in expressing a cultural identity in their buildings rather than that of the owners' wishes and whims" (2007: 82) (see Figure 2.4). The author also points out the influential factors behind clients' design choices; for example, influences from other countries' architecture through travel, cultural and religious backgrounds (especially in terms of men/women separation) and traditional Kuwaiti architecture including elements from one's own former home. Mahgoub cites 'diwaniya' as the most common element introduced to contemporary homes from traditional Kuwaiti homes; it is "a separate room where men gather in the afternoon to discuss social, political and economic

concerns" (2007: 82) (Figure 2.4). Many of Mahgoub findings reflect what could be the case in SA's architectural design approaches. In fact, this research's findings have proven that some are applicable to the Saudi context; nevertheless, further aspects and details were identified (Chapter 4). The article concludes that:

> "Cultural identity is a meaning making process that consolidates past traditions with contemporary conditions and desires. Multiple identities may coexist at the same time representing different groups in the society. Cultural identities may also shift from one state to the other adjusting to external pressures and circumstances." (Mahgoub 2007: 84)

Figure 2.4 Individual identities as expressed in private residences throughout the City of Kuwait [also showing diwaniya in the lower two images].
Source: Mahgoub (2007: 83)

Privacy

Abu-Ghazzeh analysed the meaning of human privacy according to a review of different sources, and produced the following core definition:

> "It is a process that aims to control transactions between persons, the objective of which is to enhance autonomy and/or minimize vulnerability." (1996: 271)

Through this definition, he concludes that three main functions are served by privacy:

> "The limiting of social interaction; the establishment of plans and strategies for managing interaction; and the maintenance and development of self-identity." (Abu-Ghazzeh 1996: 271)

Hall (1966: 144-153) discussed and elaborated on "the silent language" (Hall 1990) that forms the cultural proxemics (personal space) in the Arab world. He declared the absence of the concepts of 'privacy' and 'boundaries' to be Arabian cultural proxemics, as he asserted that he was unable to find anything resembling the Western concept of 'trespass'. Subsequently, he referred this finding to the fact that Arabs "organize relationships with each other according to closed social systems rather than spatially" (Hall 1966: 152). However, this perspective is subject to challenge in many studies that examine privacy as part of the architectural context, especially studies applied in SA (e.g. Opoku and Abdul-Muhmin 2010; Eben Saleh 2002; Al-Hathloul and Mughal 1999; Al-Kodmany 1999; Eben Saleh 1997). Abu-Ghazzeh clearly distinguishes Hall's flawed declaration, stating that:

> "The idea of territory is important in Saudi Arabia…[and] the use of boundary walls around the house is just one example of the validity of the idea of personal territory" (1996: 283)

Although Hall was unable to detect spatial privacy, the differences in applying and interpreting privacy in the public and private spaces with Arab culture (Saudi Arabia in particular) do not necessarily indicate its absence. What is more, in the present day, with the influence of Western ideologies, social terminologies and their meanings have emerged clearly in Arabs contexts, which are widely expressed through the publications of Arabs authors.

In contrast, the concept of privacy in a residential context is established using different forms, "the separation of domains" (Rapoport 1969: 66), especially with regard to male/female and private/public separation (Abu-Ghazzeh 1996). In a study conducted by Al-Kodmany (1999), two middle-class residential neighbourhoods in Damascus were examined for visual privacy. He found that the majority of women in both the 'traditional' and the 'modern' settings, regardless of the cultural and subcultural differences, considered "visual privacy at home from outsiders as extremely important" (Al-Kodmany 1999: 283). This finding corresponds with Abu-Ghazzeh's (1996) conclusions following analysis of privacy as an Islamic and a Saudi socio-cultural concept. He stated that, although there are differences between rural and urban Saudi families in terms of space use and socio-economic classes, "the basic pattern remains the same" (1996: 273).

Socio-cultural variables as presented by Rapoport

Rapoport (2001, 1985) devotes much of his work towards understanding cultural variables (in particular, socio-cultural variables) as a means of forming an architectural design model (see Figure 2.3). He has explored, defined and given examples of the various socio-cultural concepts in relation to architecture, particularly as it relates to the home environment. The following lines review a number of these concepts.

Values: these refer to an evaluation of objective materials, including houses. They also help to:

> "Define groups and make housing particularly important, because dwellings play an important role in acculturation and, hence, the survival of groups through the transmission of values, linking values to family…Major differences in values distinguish designers and users as a whole…Values help explain many preferences and choices." (Rapoport 2001: 151)

Values influence house location, type and selection of materials and colour. Nonetheless, the perceived value of an object may change with time, either in terms of increasing, or decreasing, its value. A shared socio-cultural approach to evaluating houses and their contexts creates an ideology that unites groups of individuals (Rapoport 2001: 152). An outstanding feature in house (e.g. being painted in a bright colour) may be regarded as offensive, as it can lead to a decrease in the value of its neighbourhood. On the other hand, extreme monotony can be perceived as a negative value. In the USA, regulations have been produced since 1970 to prevent 'excessive sameness' (i.e. in the design of windows and the height and appearance of facades (Rapoport 2001: 152). Rapoport also lists multiple occupancy as a means of determining value. An increase in the number of occupants in a building (or neighbourhood) has an impact on its perceived image. This can be established through the additional number of "doorbells, mailboxes and utility meters, many cars lining the streets, many people sitting on stoops, more garbage and garbage containers..." (Rapoport 2001: 152). This notion may be reflected on the developing residential context in SA. In recent years, there has been a significant increase in residential units as a result of the emergence and spread of duplex form houses. Instead of having one unit built on standard piece of land, two or more units are being established, what is more, many existing units are being divided into multiple unites/apartments.

Values are frequently demonstrated through variables linked to the socio-culture, such as **ideals, images, schemata, meanings**, etc. These produce **norms**, **standards**, **rules**, etc., which assist in **explaining the evaluation of certain contexts**. Rules and standards "can be unwritten or written informal or formal (legalistic). Rules are thus not only central in design, guiding choice among alternatives, but also guide appropriate behavior in settings" (Rapoport 2001: 153-54).

Rules influence the use of space and styles and create a cultural identity of the built environment.

Lifestyle is the broadest socio-cultural concept. Through it, groups may be identified easily, since all other concepts can be linked to lifestyle. Education, class, race, ethnicity, religion, etc. can all affect lifestyle and thus residential choices. Rapoport (2001: 154) therefore suggests that lifestyle (like culture) should be dismantled in order to be examined, this suggestion was followed by, for instance, Sidawi (2008); Ærø (2006); Salama (2006).

Chiu (2004) confirms the influence social-structure has on culture which, in her opinion, creates an 'inseparable relationship". Rapoport (1969: 55–58) also offers a number of examples from different housing contexts worldwide to demonstrate the influence of **kinship** and **family structure** on the form of houses (also see Eben Saleh (1998a)). Such examples affirm the strong influence these concepts exert on the shaping of houses in comparison to materialistic and technical influences. Housing contexts, forms and types can be understood through identifying the kinship patterns within them, particularly in traditional contexts. In contemporary settings, status, lifestyle, etc. can be more significant in determining group clusters, as lives became more centred on the nuclear family (Mallett 2004: 74).

Nevertheless, variations exist (Rapoport 2001: 155-56). Changes in family structures (amongst others) have had an impact on **roles**. House components and settings may change in accordance with such roles. For example, the changing role of women as they entered the workplace, which led to an increase in the number of cars, along with the use of outside cleaners, have all had their impact on different housing settings. These include the design/layout of the kitchen and the need for additional parking spaces (Rapoport 2001: 156–57).

Status on the other hand, can be communicated through HD. However, "it is striking how apparently clear and self-evident such communication is" (Rapoport 2001: 158).

Institutions can also influence housing settings/planning (Eben Saleh 2002). These can be religious institutions, tea/coffee shops, specialised schools or stores, libraries, museums, etc. They all attract certain groups and therefore may assist in creating certain residential clusters (Rapoport 2001: 157–58). In SA, people have different approaches towards their selection of house location in terms of closeness to schools, shops and mosques. Where some prefer being near certain institutions some would rather be far apart from them depending on the family's structure and lifestyle and probably other factors.

The female role in residential architecture

A group of feminists designers calling themselves 'The Matrix' (Matrix 1984) produced a comprehensive book that argues and criticises the environments created by male professionals alone. One of their main areas of focus is the design of residential contexts in Britain, as they lacked adequate considerations of female needs. Likewise, they affirm that restrictions made by planning regulations (usually decided by males):

> "May have not considered whether different sections of the population have different environmental needs. Lack of consideration may show itself at all levels of decision-making…In short, women play almost no part in making decisions about or in creating the environment. It is a *man-made* environment." (1984: 3)

The Matrix suggest that inadequate HD decisions created without female input led to house designs that forced women into performing extra work, caused dangerous road access and other social implications (1984: 11). They also believe that a house layout can determine how a woman will organise her life (1984: 55), including the fact that houses designed for the nuclear family have little consideration for the privacy of the individual. Moreover, the size and allocation of spaces on the plans could indicate their type/function, and hence become assumed, so little alterations could be made, particularly with changes in lifestyles. Additionally, there were spaces omitted from the designs, such as a children's playroom (1984: 55–56). Likewise, the demand for bigger kitchens with sufficient dining space was not implemented, even though design standards have suggested this (1984: 80). The Matrix sheds light on the fact that, until the period in which the book was published, housing design guides reflected the needs of the stereotypical family of the 1950s. In other words, they did not consider contemporary changes in families' lifestyles, such as the implications of women working outside of their home. What is more, they were based on a "gender stereotype of responsibilities", i.e. functions were explained in relation to a specific user. For example, guides assumed that all housework is done by women, and not shared by the household, as may be the case today. Another criticism of the design guides was their objective approach to describing houses' needs in the form of figures that provided standardised dimensions and distribution of functions, like in the kitchen. They even provided an illustrated time chart showing typical activities carried out by a women in her house (1984: 82–88).

The Matrix also discuss the impact of having a new baby and children growing up in a house. They provide examples of real cases, which (although not aimed to be representative of any population) offered an insight into the ways in which the mechanism of a house changes with each stage in a child's life and with the change in the number of children. The conclusion was

that houses had to have some flexibility to accommodate emerging requirements (1984: 122–136).

The majority of the literature relating to Arab/Muslims' architecture refers to women, through the concept of 'family' (e.g. Abu-Ghazzeh 1997) or in relation to privacy, which is highlighted in Muslim housing studies (e.g. Razali and Talib 2013; Al-Kodmany 1999; and Abu-Ghazzeh 1996). Al-Nafea (2006), however examined the role of women in further depth and focus as part of a PhD study. She investigated women's adaptation to the changes in home contexts in the city of Riyadh, SA, proposing a female role in the home environment through a review of literature, which was clearly based on Western contexts. This is to be expected since there are still insufficient publications demonstrating and explaining women's roles in Arab and Muslim houses, where the socio-cultural context differs significantly from their Western counterparts. This was clearly shown in al-Nafea's literature review approach, as she had adequate references describing the status of Western women in relation to their home contexts. However, when it came to the Saudi context (i.e. the focus of her research), the arguments/descriptions were purely based on her own interpretation, as there was a clear lack of referencing. Moreover, this lack of literature led to al-Nafea having to base the argument on concepts derived from Western literature. Although it is possible to determine which concepts may, or may not, apply in the Saudi context, it is difficult to predict different/new concepts that only exist in SA. Such concepts need to be identified then theorised through focused studies. Nevertheless, many of the points made by Al-Nafea (2006: Chapter Two) were later justified in her thesis through her field work and the findings of the data analysis. Al-Nafea (2006) concluded that Saudi women "were real partners" in the changes in Saudi houses, due to their central role within the family structure. What is more, she realised that:

> "For centuries, women in this region were indirectly influencing the house form through their position in the family. The tension between privacy and hospitality was the main reason for this. However, Saudi women started practicing a direct role in forming the house when they started formal education and became financially independent. This major change enabled them to become full partners with men to make decisions about the house." (2006: ii)

Hospitality from the Islamic perspective

Hospitality through history has been a distinguishing character of Arab society, which was then enhanced and encouraged through Islamic principles. This concept has greatly influenced both Arab house design (AL-Afghani 1990: 36, cited in Al-Wafi 2006: 14) and interior decoration and furnishings (Akbar 1998). Nevertheless, guests are bounded by privacy constraints, which is a concept often associated with hospitality when designing the layouts of houses. Guests are

allocated specific zones in a house and are not free to stroll around other spaces (Al-Nafea 2006: 59–60).

2. 4 Residential architecture design

In an architectural process, architectural authorship is not only the responsibility of architects.

> "A variety of agents are involved, including architects, but also officials, builders, tax payers, promotion companies, and various impresarios and spokesmen, that affect in different ways both the material qualities of the [architectural] product and the symbolic values invested in it." (J. Traganou 2008 cited in Traganou 2009: 174)

Nevertheless, some studies focus on residential architecture, in terms of physical attributes and advances in housing technologies, while dismissing "the interaction between human values and the design and use of dwelling" (Lawrence 1985: 115). Therefore, "both physical and socio-cultural aspects need to be considered, but the latter need primary stress" (Rapoport 1969: 46)

The following sections discuss the factors that influence the formation of residential architecture and determinants of residential selection in accordance to the reviewed literature.

2.4.1 Factors influencing the forms and designs of residential architecture

Many factors assist in determining a residential building's form and design, these factors may relate to the climate, building materials, site characteristics, building structure type and the socio-economic factors, which involve cultural variables and individual lifestyles (Al-Anzi et al. 2009). Nevertheless, it is through the "interaction of many factors" (Rapoport 1969: 18) that a house's form is determined, not isolated factors as some theories argue.

Gunce et al. (2008) developed a table (Table 2-2), which illustrates the factors that define the design of a residence, with special reference to traditional residential contexts, the content was based on Amos Rapoport's house design theories.

Table 2-2 Factors defining traditional residential architecture
Source: Gunce et al. (2008: 824)

Natural and built environmental factors	Climate Topography Environmental texture Materials and building techniques
Socio-cultural factors	Style of living Economic structure Family structure Relations with relatives/neighbours Beliefs Traditions Social cultures values Ideology

Al-Anzi et. al. state that "social factors overcome, in many examples, climatic, material and site determinants of building forms" (2009: 23). Rapoport (1969) strongly supports this notion, writing that in some situations "social values take precedence over technological advances". Therefore, he recommends that "materials, construction, and technology are best treated as modifying factors, rather than form determinants, because they decide neither *what* is to be built nor its form" (1969: 25).

In their study on the different factors people consider when designing or buying a house in Kuwait, Al-Anzi et. al. found that the floor plan/functional aspects were the most often cited factors, followed by appearance and form, and economy and cost; environmental design factors, however, came last. On the contrary, lack of adequate consideration of environmental design factors came second on the list of undesirable features of existing homes. This contradictory finding demonstrates the impact of overlooking important architectural design elements during the house-design process (environmental factors, in this instance), as a consequence of following homeowners' preferences with insignificant professional interference, despite the reasons behind this lack of specialised input.

In general, "house form can now be the domain of fashion", as many designs are created for their aesthetic purpose, rather than functional requirements (Rapoport 1969: 135). However, according to Lawrence:

> "During the passage of time buildings not only undergo certain physical transformations; their meanings and uses change as well…[consequently] the relationship between habitat and inhabitant is dynamic or changeable, and it includes factors that may remain unresolved over a relatively long period of time". (1985: 119)

Therefore, researchers and designers alike must take this factor (change) on board when dealing with house designs.

2.4.2 Determinants of residential choices

Ærø (2006) suggests using lifestyle as an approach when determining preferences for type of residential district, alongside demographic, socio-economic and structural factors. The author examined lifestyle theories based on the work of Danish ethnologist Thomas Højrup and the French sociologist Pierre Bourdieu. In his quantitative study, he designs a framework of house meanings (Scheele 1994, cited in Ærø 2006) and residential choices based on lifestyle/life-mode (Højrup 1995, cited in Ærø 2006) and embedded preferences (Bourdieu 1984). The study generated a number of findings that confirm the researcher's hypothesis: "housing choice and consumption are determined by economic capacity and that we, as housing consumers, tend regularly to optimize our housing situation" (Ærø 2006:125). An outstanding result showed the importance of tradition (habitus) in people's residential district selection as they tend to select a place "that is similar to that where they grew up" (Ærø 2006:126).

Similarly, Karsten (2007) investigated middle-class families' preference for urban residential locations, she followed the families' 'way of life' as an approach in order to understand their preferences. As a result, she suggested "a framework that considers housing in relation to daily activity patterns, social networks and identity constructions" (Karsten 2007: 95).

Another, broader 'transdisciplinary' approach that integrated 'lifestyle' theories when investigating affordable housing preferences in Saudi Arabia, was presented by Salama (2006). In his study, Salama developed a framework questioning home-seekers' preferences within the boundaries of affordable housing. This paper was followed by a further comprehensive study that included sustainability factors (Salama and Alshuwaikhat 2006).

In the same context, Opoku and Abdul-Muhmin (2010) investigated housing preferences among low-income consumers in Saudi Arabia. They believe that preferences vary between different cultural contexts, and therefore it is preferable to examine them separately at the area of enquiry (Opoku and Abdul-Muhmin 2010: 219). They state that, "particularly in the Middle Eastern environment, social values and religion have a big influence on housing preferences" (Opoku and Abdul-Muhmin 2010: 221). The findings are based on a quantitative examination of housing attributes, which are then explained by socio-cultural means. This study is a reflection of an earlier study conducted in the context of the Netherlands (Hofman et al. 2006).

Nonetheless, the distinctions between the examined attributes are notable, which confirms the idea that different housing contexts demonstrate the preferences of different users.

An essential note on the factors influencing or determining residential choices was that highlighted by Rapoport (2008, 2001, 1985), he suggests that constraints can be a stronger determiner of house choices than other factors. These may take various forms (Rapoport 1985: 258):

- Constraints in resources;
- Market constraints;
- Ability to cope;
- Willingness to move;
- Ability to move;
- Knowledge and information about alternatives; and
- External constraints.

This said, many constraints are actually based on a conscious choice e.g. willingness to move. Moreover, if there are constraints against a certain option; other options may remain available. Nevertheless, Rapoport (1985) also suggests that constraints can be tightened "starting with choices made under minimal constraints, for example by wealthy people" (1985: 259). This notion is valuable in terms of understanding changes *made* or *rejected* when preparing house designs. This in some sense explains the contradiction found between people's resistance to change, i.e. to choosing different options because of certain constraints, as the same group of people may have chose to accept something they have rejected previously. The above statement may explain this phenomenon, as arising over time and in response to certain media, e.g. rich people, constraints may have been tightened or removed, altering the options available. After all, choices are "of course, ongoing" (Rapoport 1985: 276).

Another area where choice may be offered is whether to self-build or to buy a house. Although the extent of choices made when self-building a house varies worldwide, the drivers behind deciding to self-build are relatively common. Brown (2007) indicated two primary factors that have motivated self-building:

> "one concerned the cultural background…and the idea that self-building would help them [self-builders] achieve a home more closely suited to their lifestyle and sense of personal and family identity, the other concerned practical issues such as affordability and possession of DIY skills" (2007: 271).

Other factors motivating self-build houses, which Brown (2007: 271-273) had identified through her informants, were also detailed in her study. In brief these included: 1) the ability to acquire a larger plot size; 2) attain a desired lifestyle; 3) obtain a larger interior space within budget; 4) create a more thoughtful and personalised layout; and 5) achieve a grander scale at less financial risk (e.g. without the need to pay a mortgage).

2.4.3 Residential design regulations and standards

As building characteristics were previously determined by traditional standards, Rapoport suggests that it (tradition) "has disappeared" as a regulator (Rapoport 1969: 6). He identifies three reasons explaining the disappearance of tradition as an architectural regulator:

> "[1-] The greater number of building types, many of which are too complex to build in traditional fashion…[2-] Loss of the common shared value system and image of the world, with a consequent loss of an accepted and shared hierarchy– and generally a loss of goals shared by designers and the public…[3-] The fact that our culture puts a premium on originality, often striving for it for its own sake. As a result, society becomes dissatisfied with traditional forms, and the vernacular process can no longer work. This dissatisfaction is often based on nonfunctional considerations and is linked to socio-cultural factors. In most traditional cultures, novelty is not only not sought after, but is regarded as undesirable." (Rapoport 1969: 6–7)

Residential design regulations take different forms worldwide, and standards, if they exist, vary. Today, "institutionalization of controls through codes, regulations, [and] zoning" (Rapoport 1969: 59) are considered to be the constraints that limit house form choices.

Gallent et al. (2010), for example, examined internal housing space standards in Italy and England (see Colquhoun and Fauset (1991: 289-309) for housing standards in the UK), the only areas of the EU with no minimum space standards for residential buildings. Their objective was not to enhance floor-space control by regulators, it was rather to identify the space characteristics of homes in the two countries by a comparative analysis, which allowed them to understand the 'conditions' of space standards, that is "the politics, practicalities, acceptability and impact of internal space regulation in Italy and England" (Gallent et al. 2010: 1). They found that in England, housing quality was more "a product of market process and local negotiation", whereas in Italy, regulation strengthened gradually and as a result "plays a vital role in determining space outcomes" (Gallent et al. 2010: 18).

On the other hand, Al-Wafi (2006) proposed a house design guide to help ensure the qualities of Makkah's (a city in SA) modern dwellings. He combined aspects from two different models:

one was the Parker Morris guideline, which was legally enforced in Britain during the 1960s and 1970s, and the other was Christopher Alexander's theoretical approach, presented in the form of 'a pattern language' design system (Alexander et al. 1977). Through these models, he suggested specific guidelines that identified the type of internal spaces that would fulfil families' needs in correspondence with Arabic Muslim value systems. However, the guidelines offered limited variation, as he determined certain spaces and criteria that only represent part of the variable and ever-changing domestic requirements, i.e. it did not allow for future development and change in residential design. Alexander's pattern language is conceptual and therefore permits variability and for new components to emerge, which means that it can withstand change. However, Morris' standards had already encountered rejection, as they were developed in the late 1950s but by 1980 had been repealed, as legislators "called for a move to standards that reflect the need for flexible space for modern households" (Gallent et al. 2010: 2). Moreover, the significant differences between the two adapted approaches, i.e. one being conceptual and abstract, while the other constituting predetermined components and specifications, delivered an incongruous design proposal. Consequently, the outcome developed through this combination cannot be regarded as an ideal approach to designing houses today.

2. 5 Residential architecture and sustainability

The preliminary objective behind this research was to gain a form of socio-cultural sustainability in the design of Saudi houses. An in-depth review of sustainability literature specifically focusing on the socio-cultural dimension was therefore undertaken in the early stages of the research process. This review enhanced the researcher's background knowledge on the subject of socio-cultural sustainability, which appeared to be given less attention than other dimensions of sustainability (i.e. environmental and economic).

Sustainability, both in practice and research, is relatively a recent activity (Kagan 2010: 1094). It is a notion that can apply to almost any field, as any practiced field has an ethical responsibility towards human wellbeing and the environment, and fostering this objective can involve sustainable practices. Although sustainability as a general concept is not the main focus of this research, understanding the underlying concepts can assist in identifying existing and emerging issues in the practice of residential architecture, as well as developing recommendations that can work in-line with sustainability objectives (i.e. support sustainable developments).

Nevertheless, according to Owen and Dovey (2008) (who adapted Bourdieu's theoretical framework of sociology to explore the two overlapping fields of art and science in the practice of sustainable architecture): "the most productive territory for reconciliation lies in positioning both sustainability and architecture as social practice" (2008: 9).

2.5.1 Sustainability, design and architecture

Sustainability is generally defined by the WCED (World Commission on Environment and Development) as:

> "paths of progress which meet the needs and aspirations of the present generations without compromising the ability of future generations to meet their needs... it is not only a new name for environmentally sound management, it is a social and economic concept as well." (Brundtland 1987)

Whenever the subject of sustainability is discussed, the issue of design is raised, either directly or implicitly, and thus achieving sustainability becomes a design issue (Chapman and Gant 2007: 14). Based on this perception, designers play a major role in this process and "one of the reasons that designers are so important is their ability to imagine new possibilities and think 'creativity'" (Wood 2007: 103-104). Designers "play a clear role as opinion leaders and can provide direction for developing more sustainable values" (Krucken 2008: 871). However "until now the notion of 'sustainability' is used in particular by an 'elite' and has not reached some critical NGO's [nongovernmental organisations], the South of the world or the base of society" (Brocchi 2008: 33).

As earlier defined by the WCED, sustainability has been widely interpreted in later literature, but in general it refers to an overlapping of interrelated practice based on three or four pillars (Kagan 2010: 1095), sometimes interpreted as 'goals', as stated by Dillard et al. (2009: 2):

> "sustainability is often thought of as comprised of three overlapping, mutually dependent goals: (a) to live in a way that is environmentally sustainable or viable over the long term; (b) to live in a way that is economically sustainable, maintaining living standards over the long-term; and (c) to live in a way that is socially sustainable, now and in the future." (2009: 2)

The 'Triple Bottom Line' (TBL) (which also refers to sustainability in design and the production industry) was also highlighted by early sustainability movements and is defined by Elkington (1997 in Fuad-Luke 2007: 20-21) as the "simultaneous pursuit of economic prosperity, environmental quality and social equality". An alternative interpretation of sustainability is as: "the triptych of biodiversity, cultural diversity, and human well-being"

(Kagan 2010: 1094). A more environmentally oriented definition of 'sustainable development' is described in the *Forum for the Future* as: "a dynamic process which enables all people to realise their potential and improve their quality of life in ways which simultaneously protect and enhance the Earth's life support systems" (Forum For The Future n.d.).

On the other hand, a number of researchers view sustainability as a practice that has been evident in past designs, but has not been labelled until recently, when it began to be classified as a 'type' of design called 'sustainable design' (or an equivalent expression): "In fact, sustainable design can actually happen inadvertently, when it is not meant to" (Chapman and Gant 2007: 5).

Methods for measuring the sustainability of a design are required, since a true evaluation of a product's sustainability cannot be achieved through a reliance on its environmental impact alone. A holistic analysis of sustainability dimensions in an individual design must be applied in order for it to be accredited as sustainable. This is because an environmentally friendly design, or product, may have poor economic and/or cultural impacts. As a result of this, it should be viewed as harmful from the perspective of a sustainability perspective. (Chapman and Gant 2007: 8-9).

In the context of architectural studies, Owen and Dovey (2008: 11–13) believe that "sustainability is not a field with institutional boundaries like architecture, rather it is a field of discourse and practice that straddles multiple professions and disciplines including architecture, engineering, urban planning, ecology and climatology" (2008: 12). Therefore, when considering any dimension of sustainability for architectural purposes, professionals need to work through both fields.

According to Taleb and Sharples: "the main drivers behind promoting sustainable architecture are definitely ecological and energy considerations" (2011: 383). More recently, further dimensions of sustainability have also been engaged in architectural projects (Chiu 2004), particularly when it comes to economics (e.g. Opoku and Abdul-Muhmin (2010)). However, the social dimensions of sustainability remain under-represented in research and practice, with far too few publications, and no agreed definition. Huong and Soebarto (2003), however, state that projects that consider only one or two dimensions of sustainability cannot ensure a sustainable outcome, since this approach can cause gaps.

Sustainability principles are currently absent in the architectural practices of Saudi Arabia (Taleb and Sharples 2011; Dudek and Al-Hassan 2008; Salama 2007). Until recently, researchers and governmental sectors in SA have not demonstrated any serious engagement when it comes to the subject of sustainability. This can be demonstrated by the fact that 'The 1st

Built Environment Development Symposium: Real Estate Development and Sustainable Housing' was held recently in the city of Dammam (see conference proceedings for further details on the topics discussed (Abdellatif and Sidawi 2010)).

2.5.2 Issues and challenges in designing for sustainability

There are a number of challenges facing the achievement of sustainable design and sustainability-focused research (see Brocchi (2008: 33)). Globalisation is most frequently blamed as having a negative impact on sustainable development (Brocchi 2008: 54). However, Brocchi believes that globalisation can be confronted by a similar development, one that acts on "the same dimension of Globalisation: that of culture" (2008: 55).

Further factors confronting sustainable development can also be found in the way design is understood and used as a manifestation of business, challenging both designers and academics. "Design professionals are fluent in 'design for business', but they often have an inadequate grasp of 'design for the environment', and are rarely engaged in 'design for society'" (Fuad-Luke 2007: 25). A survey undertaken by Fuad-Luke (2007) gathered 100 personal statements of 'iconic' designers and revealed the following:

> "1 per cent embed sustainable design thinking (they linked environmental, social and economic factors), 5 per cent occasionally embed eco-design thinking (linking economic and environmental factors), but the vast majority, 94 per cent, focused on other aspects of design (business, production, aesthetics, emotions, innovation, digital)." (2007: 25)

This survey also reveals that the processes for sustainability "are still mostly thought of in terms of 'green' technological innovations" (Kagan 2010: 1095). This finding has been clearly established in published and visual media, where the focus of sustainability is mainly reflected in environmental terms with minor (if any) consideration of other sustainability dimensions.

Furthermore, barriers to the adoption of sustainable design are not only found among designers and corporates (the producers), but are also present in design education (Fuad-Luke 2007: 26-27). Wood (2007) revised the history of sustainability in relation to other economic and political changes, including changes in design approaches and meaning and their interpretation, and dealt with the changes in sustainability understanding, definitions and approaches. He believes that the vast majority of designers "are let down by an education system that fails to prepare them for practice as ethical entrepreneurs, and that sees eco-design as a passing fad or, at best, a specialist subject area" (2007: 101).

2.5.3 Examples of sustainable design approaches

According to Kagan (2010: 1095-1098), the search for sustainability should be understood as a search for 'cultures of sustainability', for which he sets out six keywords: 1) resilience; 2) the inter-__; 3) systems thinking; 4) autoecopoiesis; 5) coevolutions; and 6) open ethics. These refer to the preservation of diversity and to interculturality and the intercultural dialogue. They also stand for logical thinking of relationships rather than abstract understanding of the details (i.e. social systems, and how these relationships communicate with the non-human environment). Moreover, they address the ways in which social systems can be open to their environments to allow evolutionary developments, all within an open framework of ethics that supports diversity and change.

This approach towards achieving sustainability by creating 'cultures of sustainability' is analogous to a further design approach; 'Design for Behavioural Change' (DfBC). Here, however, a media (or tool) is suggested as a means of developing 'cultures of sustainability'. This approach suggests that sustainability can be reached by changing behaviour through the design of products, i.e. the way a product operates necessitates certain forms of use that are more sustainable. This indirectly and subconsciously alters users' behaviour and changes it towards adopting more sustainable patterns of use (Bhamra et al. 2008).

Brocchi (2008: 55) believes that social networks are a suitable approach for achieving sustainable development and have great potential, but that they also create a challenge. Alternatively, Bhamra et al. (2008: 237) identified seven design strategies that support sustainable use. However, all (apart from one focused on the environmental dimension of sustainability) were labelled as 'eco–'.

2.5.4 Socio-cultural sustainability in residential architecture

The meaning of the term 'socio-cultural sustainability' is ambiguous, as there is no clear or unified definition explaining to what the socio-cultural dimension of sustainability refers, or how it occurs. Generally, it implies aspects of human behaviour and relationships with each other and their surroundings. If socio-cultural sustainability is to be defined in the light of the definition of sustainability (as presented earlier), then it signifies social equality, cultural diversity, and human wellbeing (e.g. Kagan (2010: 1094)). These statements are very broad and can refer to highly complex meanings and relations, covering almost all aspects of living. Therefore, an explicit definition needs to be produced if it is to be applied formally and extensively, and to allow the production of evaluation measures, which can then assist in the

progress and development of socio-cultural sustainability, so that its applications are strengthened and can spread further.

In their opening editorial article for a collection of studies focusing on the social dimension of sustainability, Sharma and Ruud (2003) defined 'social sustainability' in terms of corporate engagements, social justice and inclusiveness. They believe that "the integration of the social dimension will challenge the research and practice of sustainability" (2003: 208). Nevertheless, they have also pointed out that "adding the social dimension to the environmental and economic dimensions further complicates public policy and organizational strategy and increases the challenges of finding ways to minimize such symbolic actions" (2003: 210). Dujon (2009: 122) states that "the quest for social sustainability reflects the particular constraints and opportunities across place, space, and time". And that the search for social sustainability is a search for processes that are able to produce social health and wellbeing, in addition to identifying the social institutions that are able to facilitate economic and environmental dimensions, now and for the future.

It is worth noting at this stage that the phrase 'socio-cultural sustainability' is the least used when describing or discussing the third dimension of sustainability, and the phrases 'cultural sustainability' or 'social sustainability' are more commonly adopted.

Chiu (2004) argues for a further elaboration of the meaning of social and cultural sustainability, having undertaken an in-depth investigation of the social and the cultural dimensions of sustainability as two distinguished concepts. She proposes that these are two concepts, sometimes taken as one broad aspect, but it is more likely that they may converge or diverge, depending on circumstances. She suggests that the meaning of 'cultural' sustainability is "not as well established as that of social sustainability, and it is often subsumed under social sustainability because of its social dimension" (2004: 67). This not only highlights the lack of a clear definition, but also accentuates the frustration created through the lack of a clear and unified expression (i.e. name) for the domain/s (Dujon 2009: 122).

Table 2-3 briefly outlines the three different interpretations of social sustainability in relation to the objective through which it is perceived, i.e. development-oriented, environment-oriented, or people-oriented (Chiu 2003). However, it is important to acknowledge all aspects of human wellbeing in order to pursue a holistic application of sustainability and the social dimension of sustainability. It is therefore more effective to combine these three interpretations when designing a framework for social sustainability, despite the fact that this will render it more complex and more difficult to apply.

Table 2-3 Interpretations of social sustainability
Source: Chiu (2004: 66)

Interpretation 1	Interpretation 2	Interpretation 3
• Social constraints limiting development – social relations – customs – structure – values	• Social pre-conditions determining distribution of resources and assets within and over generations – rules – values – preferences – norms	• Maintenance or improvement of the wellbeing of people – increased social cohesion and integrity –enhanced social stability – improvement in the quality of life
• Development-oriented	• Environment-oriented	• People-oriented

Nevertheless, following the in-depth discussion concerning the meaning of social and cultural sustainability, Chiu (2004) declares that in between the two dimensions of the cultural and the social there lies the element of 'socio-cultural' limits. In brief, the provision of socio-cultural sustainability for a society demands increased equitability, harmony, cohesiveness and an improved quality of life (Chiu 2004: 67). Nonetheless, "designers must also recognize the multiplicity of identities embedded within a cultural group" (Hadjiyanni and Helle 2009: 477).

In relation to the establishment of socio-cultural sustainability in housing, Chiu presented an extensive study on the subject, her objective being to sustain social aspects in the housing designs – regardless of the terminologies adopted. She argued:

> "That the primary concern of sustainable housing development is to meet the housing needs of the people and not to preserve the environment. However, the environment has to be safeguarded from deteriorating to an extent that it diminishes the ability of future generations to meet their housing needs." (Chiu 2004: 68)

Policy-makers need to involve the public (or at least stakeholders) in the process of generating housing policies intended to provide socially sustainable housing. This would assist in establishing a common understanding of different viewpoints and the justifications behind them, reducing conflicts and increasing harmony between them. As Chiu states: "a housing system which is more organisation-intensive would help create more social capital for the society, strengthen social cohesion and reduce social conflicts" (Chiu 2004: 74). Thus, leading to a more socially sustainable housing system.

2. 6 Section 1 summary

In this section, there has been a review of the literature concerning the theoretical aspects of residential architecture. It began with an in-depth discussion of the meaning of home/house

from a number of different perspectives. This also included a review of different approaches into categorising its meanings, alongside methods for measuring the meaning of houses' aspects from their occupiers' point of view.

This was followed by a comprehensive discussion concerning cultural and socio-cultural aspects related to residential architecture. This began with an explanation of the broader meaning of culture, and its relation to socio-cultural variables. The meanings of the socio-cultural concepts were then examined in relation to residential architecture. This included the concepts of: values, lifestyle, kinship, family-structure, roles, status and institutions. The role of females in the design of houses, and the impacts of their role on existing designs, was also reviewed and discussed. Hospitality as a socio-cultural concept was then discussed and examined as an Islamic concept.

There has also been a review of subjects more empirically related to HD. This included the factors that influenced HD forms and designs, and also those that determine house choices. The role and impacts of building regulations and housing standards on house designs have also been demonstrated. Following this, there was a detailed review of the concept of sustainability. The aim of this review was an understanding of sustainable HD, particularly in relation to its socio-cultural dimension. It demonstrated the role and importance of maintaining socio-culture in the design of residential architecture, and examined how extensively it is applied in current HD applications globally and how does it relate to the Saudi context..

In this section, a general comprehension of residential architecture theories and meanings has been established. The following section will therefore demonstrate and discuss the various design approaches found in architecture and design in general, in order to accumulate a broad understanding of this area.

2. 7 Design approaches and processes: an introduction

Design approach, method or process are terms used in an array of disciplines from creative industry to business and management. Wherever the word 'design' appears, a process exists; however, design methodologies (i.e. the systematic way or rule of approaching a design or the study of the processes of design (Cross 1999: 9)) are not as extensively studied as design processes (i.e. the sequence and strategies whereby a methodology is applied (Cross 1999: 9)). As each designer has his/her own process and applied a different process to each project, the variety of possible processes is infinite, which may explain why there are many more demonstrations of design processes than methodologies.

Bayazit (2004) presented a comprehensive record of the history of 'design studies' and the establishment of design methods and design science. She noted that with technological developments and the emergence of mass production in the 1960s, "designers no longer could rely solely on their ability to focus upon the product as the center of a design task" (2004: 18), which necessitated a different approach to design i.e. through design methods.

Notes on the Synthesis of Form (1964) by Christopher Alexander was the first publication to introduce the idea of design methods. His work was a reaction to revolutionary and progressive architectural designs based on design-by-drawing processes. Although Alexander's method was not implemented and was, in fact, considered a failure at the time, it created a paradigm in architectural design thinking (Lawson 2005: 27–28). The incorporation of theories from different disciplines (e.g. cultural anthropology and computer science) changed the perception of design and influenced approaches to it (Bayazit 2004).

Lawson (2005: 123–25) described the nature of the design process in six main points, arguing that:

1. The design process is endless: as there will always be something else that could be done. It is the designer's prerogative to decide when to stop. The duration of the design process is usually restricted by time, money and information.
2. There is no infallibly correct process: meaning that, there is no sequence of activities that guarantees a good design outcome; however, there are frameworks that can support the development of a good process.

3. The process involves finding as well as solving problems: problems and solutions should be perceived as "emerging together" instead of linearly resulting from one another, and they both become clearer as the design progresses. Nevertheless, identifying problems and developing solutions are not logical activities, they require creative thinking.
4. Design inevitably involves subjective value judgement: this involves decisions about what the most important problems and the best solutions are. Offering complete objective judgements is almost impossible as this necessitates dispassionate detachment from the design, which is usually against the nature of designers.
5. Design is a prescriptive activity: it prescribes and forms the future, unlike science that is descriptive and helps in predicting the future. Therefore, design explicitly needs to be bounded by ethics and morality.
6. Designers work in the context of a need for action: designers need to face (new) problems rapidly. Design decisions involve compromises that have consequences that may not always be taken into consideration by critics. Unlike in the sciences, where disproving a theory helps development in its area, wrong designs are rarely accepted.

In a different investigation, Steele (2000) reviewed a number of design models and compared their processes and structures. He found that the "lack of synchronisation across the phases of [the] design activity" (2000: 76) was a common feature between the models.

Below are examples of design theories and approaches[2] that predominantly are from architecture, with special reference to HD approaches.

2. 8 Architectural design theories and approaches

Ideally, the "creation of the ideal environment is expressed through the specific organization of space, which is more fundamental than the architectural form" (Rapoport 1969: 49). This notion, however, conflicts with what Owen and Dovey have pointed out, which is that "the aesthetic dimension is seen by most architects as the core of the discipline with the technical/rational knowledge base as subsidiary" (2008: 11–13). Furthermore, most of today's architecture "appears to be influenced largely by fashion, forced tastes, and an

[2] The term approach here is used to refer to both design methods and design processes.

individual's desire to garner attention through novel and sometimes shocking expressions" (Salingaros 2014a).

While many arguments are made against poor architectural designs that are the outcome of poor design methods or processes, only a few studies actually investigate and discuss architectural design processes. Davis (2008: 282) verifies this, stating that "contemporary paradigms of architectural and building production are focused more on product than they are on process". Although Salingaros (2014) critiques the limitations of architectural design processes and believes that design methods have shortcomings, in reality the majority of the processes used are based on theory and/or are not supported by authentic architectural design applications that demonstrate the theory in practice. This lack of reference to real buildings means that criticising design approaches is a difficult and often subjective task. Moreover, suggestions made regarding the reasons behind poor design cannot be taken on surface value or generalised since they are not grounded in representative data or based on clear and objective criteria.

A Pattern Language

Five decades ago, in a move against poor architecture approaches and outcomes, Christopher Alexander initiated a new architectural design method. Together with his associates, he then developed one of the most renowned systems for designing architecture. Known as 'A Pattern Language' (Alexander et al. 1977), the method is a design system that dismantles towns, buildings and construction down to their components and explains them as universal patterns. The 253 patterns presented vary in scale, the large patterns (94 patterns) deal with large-scale structures from the environment, such as, the development of towns and the layout of roads and paths. Whereas, smaller scale patterns, where distributed in two sections: one about buildings (110 patterns), and the other about construction (49 patterns).

Each pattern is defined in terms of its contextual meaning then design solutions are suggested. The solutions are not in the form of design templates, as some misconceptions may suggest, they rather present prototype recommendations that can be used many times but in different ways. When designing a project, a person (not necessarily a professional designer) is able to choose the patterns, which are relevant to his/her project and add his/her own special-case patterns (non-universal patterns) as needed, thus creating a language, i.e. the pattern language for the design of that project in hand.

These theoretical structures did not only serve the field of architecture and urban design, but were widely adopted in many other design disciplines e.g. oriental carpet design (Salingaros n.d.). In fact, the pattern language concept was extensively adopted in computer science as a

framework for linking objects in programmes i.e. pattern languages for programming. The impact of Alexander's pattern language on computer science has exceeded its impact on architecture (Salingaros n.d.), this may be because of the relatively faster development capacity offered in computer science in comparison to architectural developments and production.

Adopting the notion of patterns in architecture (and related fields), helps understand architectural components not only in physical terms, but also as live entities. Patterns explain the fields where objects and social meanings are manifested, then the relationships between a certain amount of patterns form the pattern language. This in return, helps guide designers when designing buildings with similar patterns.

A pattern language as a design system encompasses most of the variables sought after in a HD (which were discussed earlier in the first section of this chapter). Therefore, and for other reasons, it was adapted as the main design approach (alongside the support of other design theories and methods) for the HD model suggested in this research[3] (Chapter 6).

Adaptive design method

Nikos Salingaros, one of the foremost architectural theorists, adopted Alexander's conceptual approach in many of his writings. In *A Theory of Architecture* (Salingaros 2006) he based his architectural theory about 'adaptive design' on two languages which he believed to be complementary to each other and which can be used to guide architectural and urban designs: 1) a pattern language; and 2) a form language. Combined they generated what he named the 'adaptive design method': a method that produces "structures and environments that are adapted both to physical human use, as well as to human sensibilities… An adaptive design method provides the means of creation, but not the product" (Salingaros 2014b).

According to Salingaros, the pattern language "codifies the interaction of human beings with their environment" (Salingaros 2014a), it defines how humans naturally interact with their built environment and in return provides solutions that are culturally and environmentally appropriate with the aim of enhancing such environments and offering a sense of wellbeing. The form language "consists of geometrical rules for putting matter together", it "is strictly geometrical"

[3] Further explanation of Alexander's pattern language system is demonstrated in section 6. 3, as this approach is adapted for developing the Saudi HD model.

(Salingaros 2014a). A form language is defined by architectural components (e.g. walls and ceilings) that constitute the form and style of a building. It is:

> "A repertoire of forms and surface elements that can be combined to build any building, and so it represents more than just a superficial style…One extremely successful form language, [is] the "Classical Language" ." (Salingaros 2014a)

Salingaros also argues in his theory that architectural form languages can last without having to be adapted to human needs since they do not carry architectural meanings. In this case, the form language "becomes an end in itself" as it produces visual statements that are detached from human needs. Nevertheless,

> "Not all form languages are adaptive to human sensibilities. Those that are not adaptive can never connect to a pattern language. Every adaptive design method combines a pattern language with a viable form language, otherwise it inevitably creates alien environments." (Salingaros 2014a)

This notion corresponds to Hall's (1973: 136) argument about congruence in patterns. He explains that when a certain culture copies architecture from another culture, they are merely taking the components but not the patterns that constitute the true meanings linked with those components (more details are discussed in section 6.2.2).

Participatory design

In another narrative, which in some sense corresponds with Salingaros's theory, Day (2003) distinguishes between designs shaped through thoughts alone and designs that include feelings. He refers to **participatory** design by social inclusion, declaring that the users' involvement in a design strengthens their community bond and enhances their relationship with the place as they end up caring more about the place, which eventually increases its value in their eyes. Day suggests that places shaped by thoughts alone i.e. by people who do not belong to the place (as apparently is the case with twentieth century architecture), produce 'feelingless aesthetics' (2003:151). He also refers to the participatory design approach as a 'consensual design' since it is based on communal aims and future aspirations.

> "Consensus work is about transcending *individual* desires by listening to, and responsibility toward, the *common* aim. It moderates the disproportionate influence of forceful personalities, and, if the members are mature, encourages listening to each other." (Day 2003:153)

Day demonstrates through his personal experience and through examples his process of applying a consensual design method, for example, he states:

> "I try to hold back solution-type ideas (from everybody, not just myself) so as to be as open as possible to insightful listening to the needs and situation of the project, its users and the place it will be sited. I try, likewise, never to propose ideas but let them arise out of the group – my task in particular being to illustrate them and identify their potential and limitations. Definitely not to judge, criticize or advocate them…I therefore insist everybody avoids possessive words like 'mine', 'yours' etc. This is difficult but vitally important – it makes the project *ours*." (Day 2003:153–54)

While the objectives of participatory designs are honourable and the outcomes can undeniably enhance wellbeing (when applied thoughtfully), this method is better suited to large projects that involve communities as users (not individuals) such as schools, offices, non-profit housing projects and landscape/park projects (see Özdemir et al. 2010). This notion is supported by Traganou's (2009) statement about participatory design, which says that "practices of participatory design are mainly conducted under the labelling of 'architectural activism' and have remained in the periphery of the academia" (2009: 179). Such projects differ from private buildings that are designed for solitary users (e.g. a house for a nuclear family). In such cases i.e. projects for private use, participation should be a natural approach, especially when the client is the end user, but the process will of course differ.

Affordance-based design

Maier et al. (2009) developed an architectural design method based on the **affordance** theory. The concept was first introduced in ecological psychology by James J. Gibson (Gibson 1976, cited in Maier et al. 2009). The method's developers believe that "the concept of affordance is more fundamental to architecture than other often studied concepts, particularly that of form" (2009: 393). In Gibson's definition 'affordance' refers to what the environment offers animals, whether for good or ill, "it implies the complementarity of the animal and the environment" (Gibson 1976, cited in Maier et al. 2009: 395). Maier et al. explain the meaning more clearly using examples related to architecture, as in:

> "Buildings have many high-level affordances, including affording shelter to occupants from the exterior environment, affording aesthetics to occupants and passers-by, affording storage of goods, affording comfort to occupants through climate control, etc. … Floors afford the support of occupants' weight, as well as furniture, the attachment of finish materials, the routing of utilities, and in some cases even drainage." (2009: 396)

Maier et al. suggest that the concept of affordance can improve architectural design processes through providing the people involved with a shared language. They state that affordances

indicate "a complementary relationship between two [or more] separate systems" (2009: 397), and distinguish two classes of affordances:

1. Artefact-user affordances (AUA), where the relationship is between the built environment and human users, which signifies a direct usefulness to the users; and
2. Artefact-artefact affordances (AAA), where the relationship is between multiple artefacts without the need for humans (e.g. walls affording support to ceilings), which signifies an indirect usefulness to the users.

The authors/developers of the affordance method also discuss the adaption of the theory as an architectural evaluation method by using the concept of affordance to understand building failure. They offer strategies for this application and suggest that if the ill/negative affordances of a building are understood at the design stage, the design can be modified and the potential undesired behaviours avoided.

According to Maier et al. (2009: 401-3), the affordances approach can help unite the historically separated architectural ideas, form and function. The 'meanings' of the built environment (widely argued in environment and behaviour research) may form part of the affordance concept.

In terms of the design process, the most significant feature of an affordance approach is the ability to identify the elements that a design should *not* afford. It is often the case that focussing on the positives a design offers, such as meeting the budget, blinds the designers to undesired outcomes, such as high-maintenance/running costs (Maier et al. 2009: 406).

It should be clarified that, although the affordance-based design theory offers potential to architecture design, a practical application of the method has not yet been attempted in the design stage (according to current literature), the theory itself is still considered as being in progress. The researcher believes that this approach may be valuable as an evaluation method for design components in the conceptual design stage or for evaluating failures in existing buildings (as proposed by the authors of the approach). The reason behind this opinion is the theory's incompatibility with actual design processes, such as the need to identify the architectural components that will eventually be evaluated in terms of their affordances. In other words, in order for the affordance concept to be applied there has to be a design — be it of a complete building, a building's details or the layout of a building's spaces. Therefore, the theory cannot be identified as a design approach to architecture but, as recommended above, it can be extremely beneficial when applied as an architectural and design evaluation concept, which the field is persistently in search of.

2. 9 Residential design approaches

This section does not suggest that residential design has or should have different approaches from those used in the general architectural design domain. However, different building types and buildings that have similar functions but different types of users benefit from approaches customised or adapted to their speciality. Residential design approaches often offer a description of design processes rather than methodologies, as discussed later on.

According to Rapoport (1969), there are four objectives inherent in successful HD, namely:

> "1) It needs to be socially and culturally valid… 2) It should be sufficiently economical to ensure that the greatest number can afford it… 3) It should ensure the maintenance of the health of the occupants… 4) There should be a minimum of maintenance over the life of the building." (Rapoport 1969: 129)

A fifth objective that should be added for successful HD is the consideration of **future changes**, or in other words, the provision of a flexible HD. The criterion of 'flexibility in use' in the Lifetime Homes (LTH) concept within UK housing policy goes back to 1918 (Milner and Madigan 2004: 728). What is noteworthy is that the provision of flexibility and adaptability in HD should not be taken as a design method or a new design approach, "rather, it should be regarded as an evolutionary process, which needs further refinement and development" (Milner and Madigan 2004: 734). The same occupiers, due to changes in their lifestyles or needs, may require alterations, these may also be needed because of changes in tenancies, i.e. different people having different needs. Lawrence (1985) backs this recommendation to consider future changes when designing houses. He believes that it is necessary "to explore how specific spaces acquire differential values for members of the same household and how these spaces are appropriated in diverse ways through the passage of time" (1985: 118). However, this does not suggest that a house designer should anticipate possible future changes and design according to his/her expectations, as this would be an arbitrary and irrational approach. Rather, the house designer can offer flexibility in the building's structure, construction system, materials and the general layout to facilitate future alterations. Liu's (1995) study about the way shapes are perceived and analysed by experienced and inexperienced designers offers a good approach to understanding and consequently deciding on the best plan/layout solutions in terms of adaptability and practicality for future alterations.

Most publications discussing HD, however, discuss it in terms of housing projects not privately built houses. Brown (2007: 261) acknowledges that there is a shortage of studies examining houses designed by their occupiers. This inconsistency between the numbers of studies

examining the two types of HD approaches in effect reflects the ratio between these types of residential architecture. However, this does not justify the shortage of studies examining the contexts of and legislation related to average (not grand) privately/own-built houses, which are still dominant in many regions, e.g. Saudi Arabia and Libya (Abdalla 2007: 5).

Among the few publications discussing the process of privately built houses is De Vido's (1990) *Designing Your Client's House, an Architect's Guide to Meeting Design Goals and Budgets*. A point that should be highlighted here, however, is that the term 'client' does not necessarily refer to the person/s who will live in the house as 'client' can refer to a residential developer or a project representative especially in company housing projects. In the book, De Vido illustrates some of the practicalities of designing houses through 43 house projects and offers useful architectural practice advice. He starts by listing the information, which should be known before starting the design relating to the project's settings and construction details. He also suggests 16 general questions, which are to be asked to the client prior to starting on the design. The information given is quite brief and practical, which makes the book a good guide for practitioners rather than a reference point for academic researchers.

A practical and useful approach to designing houses by practitioners is the use of a client *questionnaire*. Several client questionnaire examples may be found on architectural firms' websites (e.g. Weger Architects (2004); Prull Custom Designs (n.d.); John Henry Design International (n.d.)) (see Appendix 1). These questionnaires act as a tool to understand clients' design requirements. They also equally help clients clarify their expectations and become aware of aspects of the project that may not have crossed their minds.

In a study of self-built houses in the UK, Brown (2007) examined the narratives of the process using six case-studies. She explains how the process can take longer than in commercially built houses (i.e. by developers), which allows for more detailed design decision processes. She notes that homeowners generally initially establish the design as a concept or an image in their 'heads' then, with the assistance of an architect, transfer this image onto paper i.e. draw up the plans. She, however, recorded that the inability to translate drawings into physical forms, spaces and volumes was an issue experienced by self-builders.

> "A marked feature of the design process was its iterative and creative nature—the ability of participants to react to the project as it evolved and modify the design based on reflexivity and experience… In this sense the design process for the amateur builder is a highly creative (extensive, reflexive, and improvisational) process. Details are planned, designed, and completed over time as resources, and the experience of living in the property informs the next more detailed set of decisions." (Brown 2007: 280–281)

The architect's role in the process and practice of architectural design is discussed in the following section.

2. 10 Architectural practice and the design process

> "There are some promising signs that a new way of designing can make a positive contribution." (Fuad-Luke 2007: 20)

Much of the blame of poor architectural production is placed on the architects' approach to architectural design. Although this may be true, there are other factors that influence the production of architecture and its quality e.g. the economy, resources and legislation. The architect's role during the design process is discussed below.

Architects are creative problem solvers, they are responsible for creating aesthetic and functional quality buildings that serve their users' needs.

> "Good solutions cannot be created by regulations alone: regulations only provide a rough idea of what needs to be achieved, and must be combined with an ability to innovate via co-operation between the actors… the architect should initiate the dialogue and maintain good communication between the client, building users and the professional team using a variety of media and tools. A creative process requires a certain amount of trust between participants and courage to pursue one's convictions… the architect can be both interpreter and guide through this complex process." (Svetoft 2009: 284–5)

One of the most common and vital features used in the architectural process is *communication.* Good communication is essential during interaction with a client and between members of the architectural design team; it is because of miscommunication that errors occur (Emmitt 2009: 275). Gorse (2009: 55) defines communication as "the sharing of meaning to reach a mutual understanding and to gain a response". Communication theories argue that for an understanding to occur between communicators, they have to have a shared background of the social reality (Gorse 2009: 55). This statement rationalises many of the misinterpretations occurring during the design process whether by the architect or the client. The lack of a shared communication language or a 'lingua franca' (Erickson 2000) is an issue that has been addressed by many, including Erickson (2000) and Lawson (2005). If a lack of understanding of a person's social background (where his/her ideas, language and interpretations were developed) is added to the lack of a shared communication language, further misinterpretations and misunderstandings are likely to occur. Otter (2009: 76) sums up a number of the most common communication methods and mediums (tools) in an architectural practice, including dialogue, telephoning, video-conferencing and paper. He then explains the benefits of specialised project websites that

are used for managing the design process and demonstrates the benefits of using 3D modelling packages in the design process which mainly help identify changes and errors in a design as a result of a number of team members working on different parts of a project simultaneously (2009: 79).

The *inclusion of users* as part of the architectural design process is extremely limited in studies exploring architectural practices and, if mentioned at all, it is only in the initial programming stage. The majority of design models and frameworks also lack the incorporation of the so-called vital 'users' in their structures. An assumption by Dalhom (2000, cited in Svetoft 2009: 286) is that some architects may be deterred from involving users in the design process as they believe that their creativity may be threatened or affected by such users intervening in the process.

Jensen and Pedersen (2009) also discuss the involvement of users in architectural design processes, particularly in the briefing stage. Yet, the discussion remains focused on users who are part of a community of users and not the private owners of a project who are also its users (as explained earlier when discussing the participatory design method in section 2. 8). The input of a private client who is also the user has not been adequately investigated in studies; therefore, data on the relationship between the architect and a private client and the role of a private client in a design process is limited, which may be why there are so many poorly executed private buildings in our surroundings. This gap in architectural research needs further attention, as the findings may help identify and solve a number of issues relating to architectural practice and the resulting outcomes[4].

> "Today, many are too overwhelmed by the power of the economic system to believe that tiny, local changes will have a sufficient impact. This is where we might initiate a change." (Wood 2007: 111)

2. 11 Architectural design research as opposed to product design research

Bayazit (2004: 28) claims that "most design research studies were made in architecture because of the requirements of the societies after World War II… [and that] future studies in various design disciplines may benefit from the experience and progress in disciplines concerned with

[4] In section 6.5.2, a suggestion is made towards resolving this gap.

building as well as engineering". Although architecture may have initiated design studies, today it is evident that research in other design disciplines, such as product design, have much more detailed descriptions of design methodologies and processes. They (product design models) also benefit from the advantage of being able to be frequently evaluated and modified through, for instance, prototypes, which is not usually a viable option in architecture.

Furthermore, the cost of product design and production varies considerably between products depending on their design and production specifications, also, market competition is much more threatening than in the architectural field. Therefore, there is a demand for rapid development. However, use-time/product-life is relatively short and limited in comparison with architectural projects whose outcomes are designed to endure for hundreds of years. Besides, product design covers a wide range of artefacts, which most of the time require different approaches relying on the function, material, location, environmental characteristics, etc. of the artefact. This demands a wide span of focused studies that vary in their complexity and the dimensions covered.

In contrast, in architecture, studies focus on theoretical analysis and outcomes. This is aside from research covering technical and environmental elements of architecture, such as, cooling/heating systems and developments of smart buildings' systems, which will rarely involve social or spatial analysis.

The attempt to integrate other design related studies into what is, primarily, the architectural field of research, fits in with Traganou's (2009: 173) proposal of a new scholarly realm that interconnects architecture with design research and fields other than design. She declares that "the relation between architecture and design studies has not been systematically addressed and is in urgent need for reassessment" (Traganou 2009: 177). Interlinking architecture systematically with design studies can enhance and develop stronger evaluation models as new parameters can be established. This can also extend the 'ethical' element in architectural design (Traganou 2009: 179). In support of her argument, Traganou (2009) states:

> "Can architecture, for instance, still afford not to take into account the users' accounts and users' interventions after buildings are handed to their residents? An examination of architectural design methodologies in parallel to those pertinent in product design would indicate that users' perspectives are paramount for the improvement of architecture as a service to the end-user." (Traganou 2009: 178)

The following section provides examples of different design approaches other than the ones specifically developed for architecture.

2. 12 Miscellaneous design approaches

There is a vast amount of literature demonstrating, analysing and developing design approaches for different design disciplines and for different objectives. Here, the researcher classifies design approaches into two broad groups, those that are 'process' and/or 'production' oriented, i.e. do not involve users as key assets; and those that are human/user focused. This section presents a select number of design approaches and processes found in the literature. All the examples selected demonstrate an interest in enhancing an element of people's lives. The examples were specifically selected on the basis of this research's social interest, they aim to highlight the different design approaches offered by disciplines other than architecture. The review is not intended for comparison or evaluation purposes, it is rather an exploration of design approaches, their concepts and variables with the objective of enhancing the researcher's theoretical sensitivity (see section 3.2.3, point number: 6, p. 89) and broadening her awareness of the variables adopted in design disciplines (i.e. beyond the architectural discourse boundaries).

2.12.1 Design approaches and wellbeing

Fuad-Luke (2007) developed a model of wellbeing and design (Figure 2.5). He took nine well-established design approaches and analysed each one by positioning it within the wellbeing model. His contribution enables designers to decide on the better approach for their projects and understand how wellbeing will be generated (Fuad-Luke 2007: 28–31).

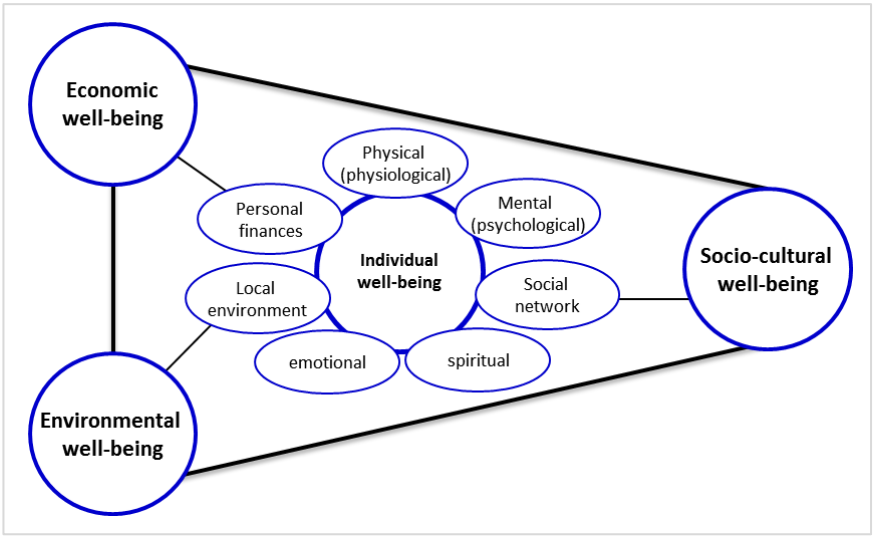


Figure 2.5 A model for design and 'wellbeing'.
Source: Fuad-Luke (2007: 24).

In Fuad-Luke's presentation of the models, he highlighted the wellbeing areas that each design approach focused on (each approach was in a separate diagram). 'Co-design' was the only design approach that focused on *all* the dimensions of 'wellbeing' (the dimensions shown in Figure 2.5). While the other eight design approaches varied in their focus from being solely oriented towards one wellbeing dimension to multi-dimensional, none covered all the wellbeing spheres. For example, the model of 'sustainable product design' focused on the three main dimensions of wellbeing but did not involve the 'individual wellbeing' dimension. 'Eco-design' on the other hand, focused only on the economic and environmental wellbeing aspects, whereas 'user-centred design' covered the economic wellbeing and all aspects of individual wellbeing. Furthermore, approaches such as 'open-source design', 'inclusive/universal design' and 'metadesign' focused on elements of the socio-cultural dimension of wellbeing (for illustrations see Fuad-Luke 2007: 29–36).

2.12.2 Cultural design

Many researchers believe that visual representations from and of local cultures are an important approach to cultural sustainability. The visual elements that some researches investigate may also be referred to as 'visual culture'. Barnard (1998) defines visual culture as:

> "A field, a system of institutions, objects, practices, values and beliefs in terms of which visual experience is constructed". (1998: 32)

He stated that society is not a backdrop or subject for design, instead visual culture:

> "has the role of producing, maintaining, and transforming society. Visual culture is one of the ways in which society is produced; it is one of the ways in which the different social groups constitute themselves." (Barnard 1998: 195)

This approach verifies the role visual characteristics can represent in sustaining elements of socio-culture, it is the materialistic artefact of society. Designs based on old patterns are "not merely copying the style but an intelligent use of principles" (Al-Hathloul and Mughal 1999: 217), which is necessary for creating forms that are suitable for the future.

Design approach developers and researchers have different processes to this approach, for instance, Lin (2007) proposed a design approach for modern products based on Taiwanese aboriginal cultural features. The suggested method enhances original cultural features using new technologies, it involves the analysis of visual features, function, cultural meaning, the operational system, and the scenarios associated with the product's use. The features examined are related to socio-cultural aspects, in other words this approach may be described as a method

of sustaining socio-cultural design features and, as a result, sustaining some of the socio-cultural characteristics.

Lin (2007) developed a framework for studying cultural objects (Figure 2.6). He synchronised two analyses of culture, one that divided culture into layers and another that divided it into levels. He then linked the layers and levels to certain design features. Following the development of the analytic framework, he then developed a cultural design model (Figure 2.7). The model consists of three phases: the conceptual model; the research method; and the design process (Figure 2.8 illustrates the process of cultural design further). After reaching the final stage i.e. implementation/designing a product, the designer evaluates the features, meaning, and appropriateness of the developed product and may make alterations to the prototype or produce the product and conduct further evaluation on it (Lin 2007: 50).

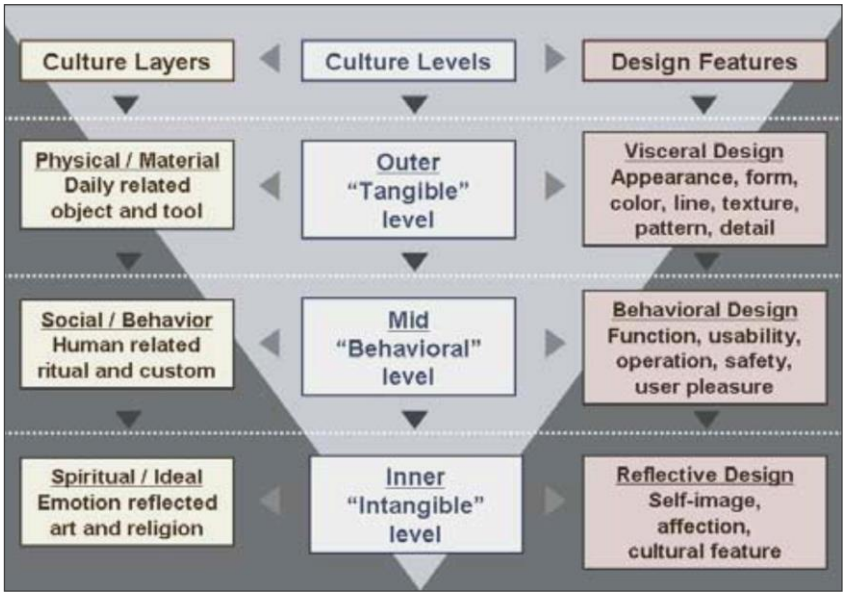


Figure 2.6 Three layers and levels of cultural objects and design features
Source: Lin (2007: 48)

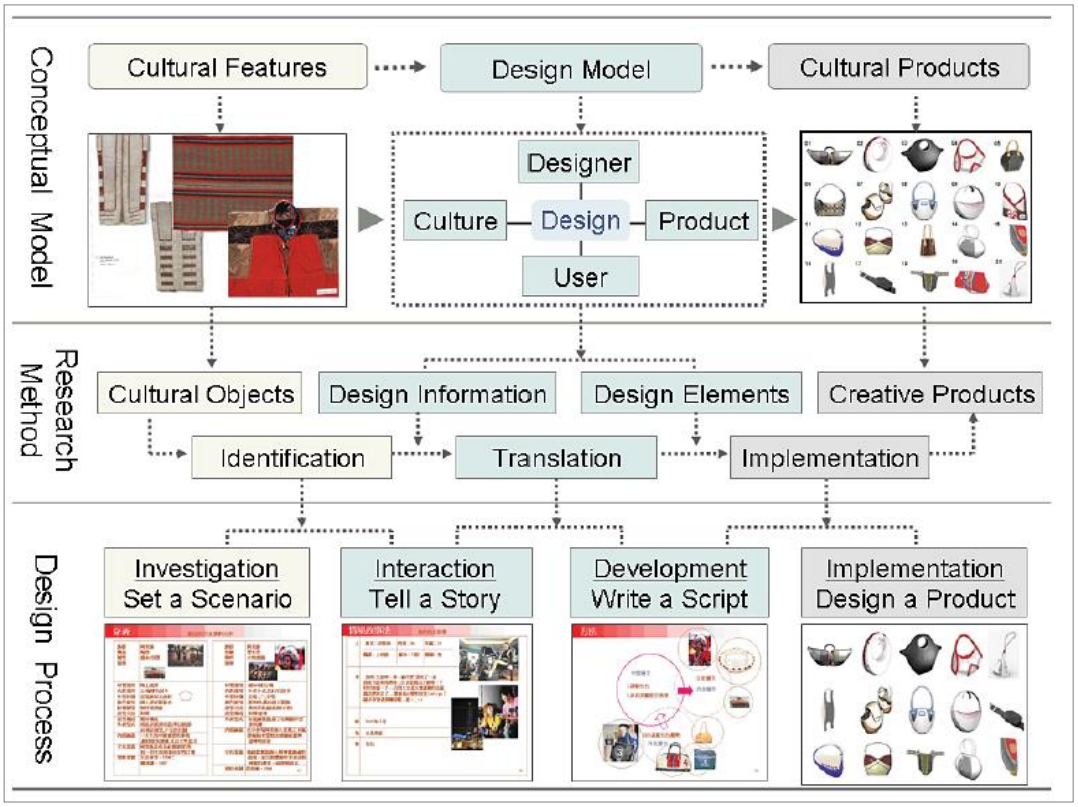


Figure 2.7 Cultural product design model
Source: Lin (2007: 49)

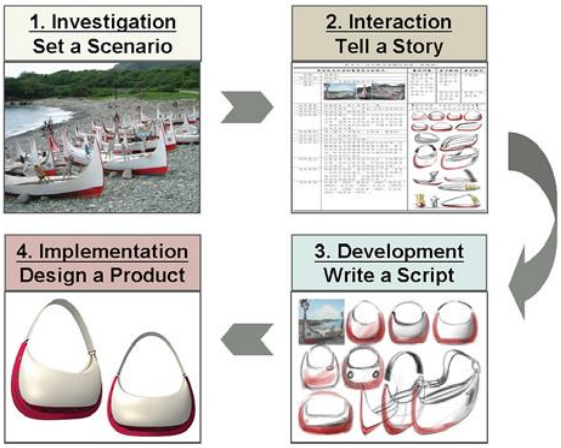


Figure 2.8 The cultural product design process
Source: Lin (2007: 50)

This comprehensive cultural design framework not only considers visual aspects of culture but also the socio-cultural concepts, which are clearly highlighted during the 'investigation/setting a scenario' phase at the outset as well as in other phases.

2.12.3 Scenario-based methodology

Jonas (2001) introduces the concept of 'scenario' as a guide in a functional framework for a design process. He identifies scenarios and scenario building as:

> "Images of possible, probable, or preferable futures or futures to be avoided, and sometimes comprise the steps to achieve them… Scenario building is a central concept in design, shifting the focus from the object to the process of communication and interaction, and covering all phases of the design process." (Jonas 2001: 76)

In a different application, Aula et al. (2003) use scenario building to kick-start the development of a socio-cultural design modelling method to be used for industrial design and product development. They declare that "design scenarios make the context understandable and they can be used as a communication tool during the product development process" (2003: 132). Aula et al. developed a structure to study users' socio-cultural contexts and their relation with products, not in terms of usability or functionality but in terms of the meanings people give to products and their influence on social interactions. They believe that such models are useful for human-centred design and essential for design processes; however, "it is such an area that is extremely difficult to describe and get a mutual point of view of" (Aula et al. 2003: 133).

Although this approach does not necessarily yield deep socio-cultural meanings, it can assist in forming a link between the different phases of a design process.

2.12.4 User-value based approach

In order to develop the 'user-value' based approach, Boztepe (2007b) reviewed 'value' theories from anthropology, sociology, philosophy, business, and economics. She then reviewed user value types and properties and was able (through case studies) (Boztepe 2007a) to identify four primary categories of user value: 1) utility; 2) social significance; 3) emotional value; and 4) spiritual values (Figure 2.9).

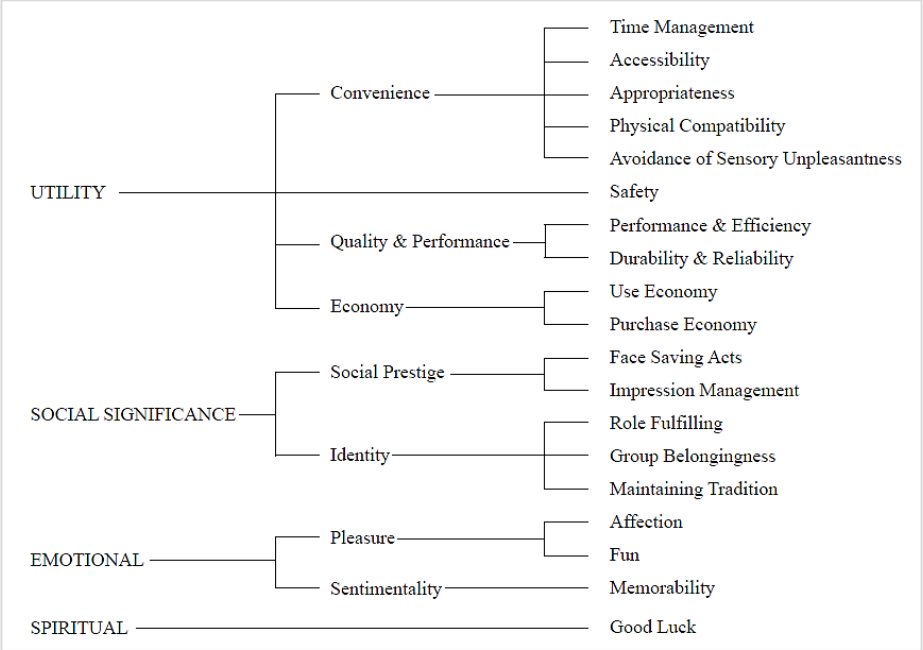


Figure 2.9 Categories of User Value
Source: Boztepe (2007b: 59)

A non-linear model was developed (Figure 2.10) as a result of Boztepe's studies. The model illustrated the interrelationships between user value categories, cultural factors and product properties. This was followed by the development of a framework for product adaptation, which is based on user-value analysis (Figure 2.11).

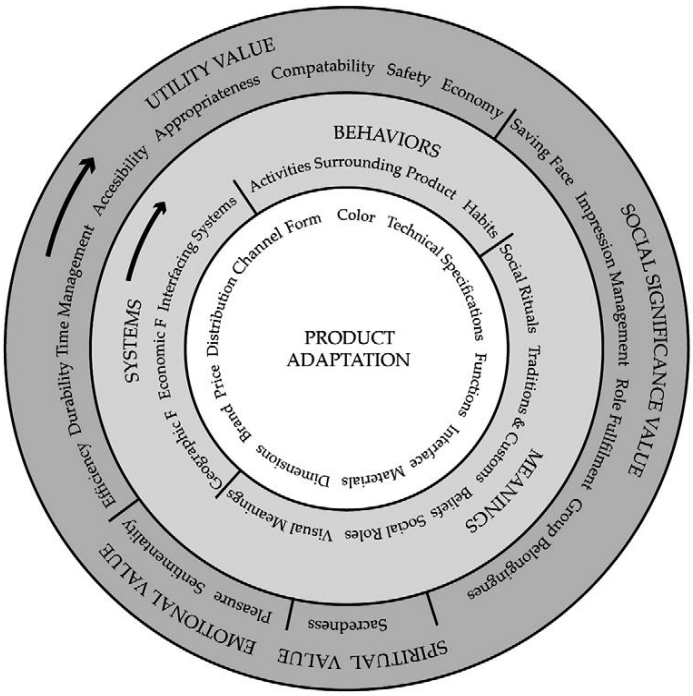


Figure 2.10 The interrelationship between user value categories, cultural factors, and product properties
Source: Boztepe (2007a: 529)

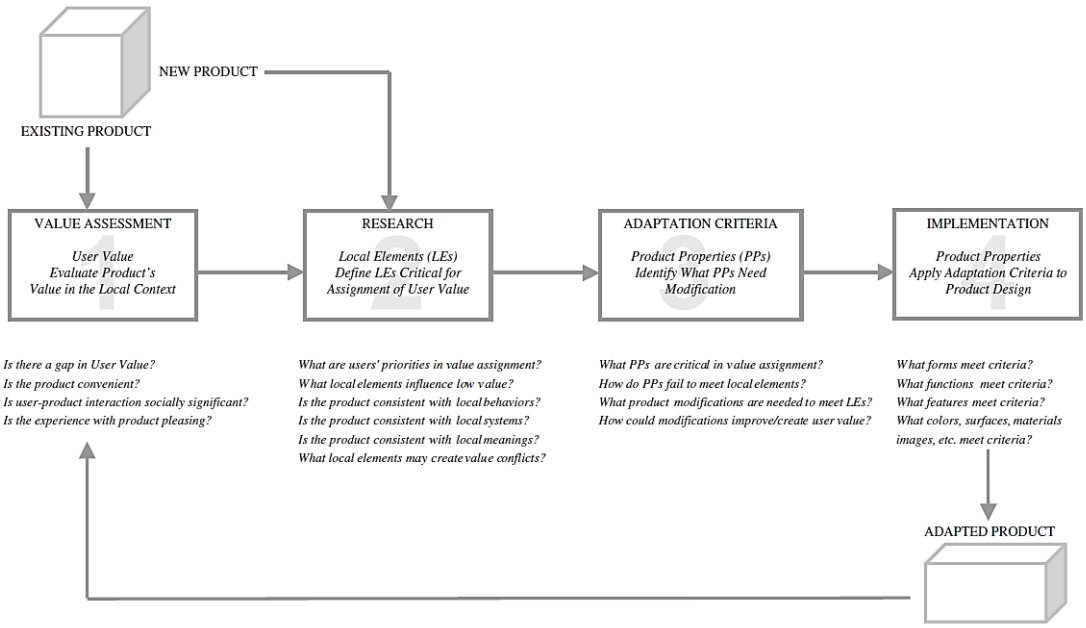


Figure 2.11 User-value-based adaptation guidelines.
Source: Boztepe (2007a: 530)

2.12.5 Metadesign approach

The metadesign approach is classified as a higher order design (Giaccardi 2005b). Metadesign differs significantly from any approach that develops a complete system; rather it creates "socio-technical environments that allow users to create the solutions themselves. *It is not less design, but a different kind of design*" (Giaccard et al. 2008: 21).

> "Metadesign [is] conceived as the design of a "metaproject", metadesign shares with generative and evolutionary design the focus on the design of initial conditions or "seeds". In this sense, it methodologically comprises both generative and evolutionary design. However, metadesign transcends them by incorporating the principles of participation and emergence, and changing the way in which systems and content are designed." (Giaccardi 2005a: 20)

According to Wood (2007), metadesign can be more 'extensive' than design since it is not confined by any specific discipline. Metadesign aims at creating infrastructures for new forms of collaborative design by distributing design activities at different times during the interaction/use time (Giaccardi and Fischer 2008: 21). Figure 2.12 demonstrates the metadesign concept in further detail.

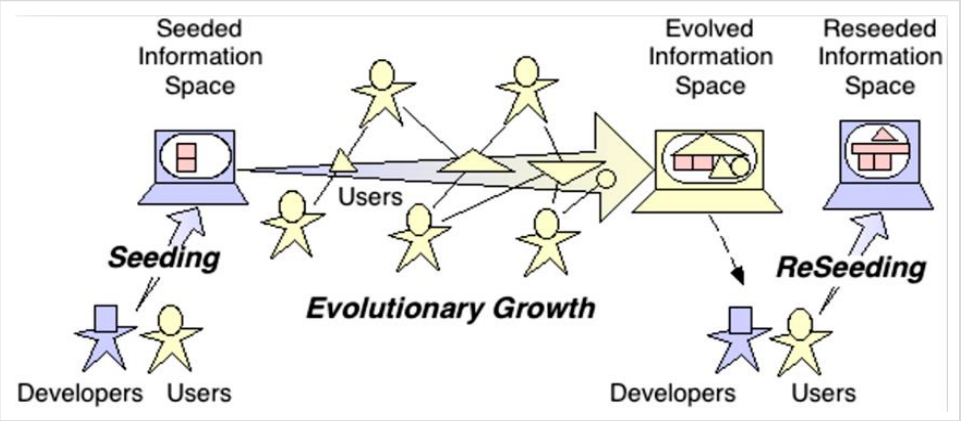


Figure 2.12 The seeding, evolutionary growth and reseeding process model
Source: Fischer et al. (2005: 492)

This design approach has not been adapted for the design of architectural buildings; however, it could prove to be beneficial. Metadesign supports the notion that needs change through the passage of time, which is a feature strongly associated with the design of houses (as discussed in a number of occasions under Chapter 2: Section 1 and Section 2). Therefore, adapting the metadesign approach based on this measure can generate a revolutionary design approach that is able to produce houses that are able to withstand the developing needs of its occupiers in a more practical way (section 6.5.3 discusses a suggested adaption of the method).

2. 13 Section 2 reflection and summary

This section presented a broad review of design approaches, methods and processes. It started with a brief description of the design processes and how they initiated and formed. This was followed by a comprehensive review of high-level architectural design approaches, which included: 1) a pattern language; 2) the adaptive design method; 3) participatory design; and 4) the affordance-based design approach. Each method was developed to fulfil certain objectives and offered an extensive set of concepts. Processes focusing on residential architecture design were reviewed; it was noted that there is a lack of studies focusing on the processes of privately built houses. The review led to the following important question (in which the answer was discussed in section 6.5.5):

> Is architecture conceptually the same so that one broad design approach may be suggested/applied for any of its types?

In other words, could the design for a school or a shopping mall be approached in a similar way as the design of a home, an office building, a religious building, etc.? Although some will argue that approaches/methods differ from processes and that approaches are so general and abstract

that they may even be applied to other design purposes, examples and discussions in architectural literature do not reflect this notion. When it came to the detailed explanation of their structures, the majority of theoretical approaches leaned towards certain types of buildings/uses (e.g. housing), or specific ownership types (e.g. produced through a public authority).

While answering this question was not the main interest of this research, it stimulated analytic thinking upon the subject and the concepts involved in architectural design. It also facilitated the understanding and informal evaluation of the different contexts for building houses. That is, not all houses are built with the same intention and not all houses are created using similar concepts. Lastly, it is not fair to pass a general judgement towards architectural design approaches or processes since the settings and criteria that produce each type of building, even buildings that are similar, can vary considerably.

In order not to be confined by the proposals presented in architectural studies alone, the researcher reviewed other design disciplines and the design approaches presented within them. The reviews presented focused particularly on design approaches that involved users and/or had special interest in sustaining socio-cultural variables. The variations within the examples reviewed enhanced the researcher's awareness of languages, concepts and theoretical formation, which was highly beneficial to this investigation.

The following section demonstrates architectural paradigms in SA and explains the current architectural design contexts to give a clearer idea of the examined area.

2. 14 Introduction

The Saudi region has a rich and varied architectural heritage and history, mainly because of its geographical location (Figure 2.13). SA links the two continents of Asia and Africa and its position in the middle of the Arab countries on the Arabian Peninsula also makes it a major travel link between these countries for commercial and other purposes.

Figure 2.13 The geographical location of Saudi Arabia
Source: Google Maps

A characteristic that has contributed to the diversity of the region's architecture is the large geographical and meteorological spread of the country, which has resulted in a variety of building conditions, materials, styles and concepts (Figure 2.14). It has also led to the development of a variety of social and cultural characteristics and behaviours.

Figure 2.14 Variations in regional architecture in SA
Sources: National Built Heritage Forum 2014

Furthermore, the 'Hajj' i.e. the annual pilgrimage to Mecca, which is the fifth pillar of Islam, has uniquely helped shape the characteristics of SA over the years. During the Hajj period, thousands of pilgrims (up to two million pilgrims in recent years) arrive in the country from all types of destinations. Coming from diverse cultural backgrounds, the pilgrims' customs and traditions enrich the local heritage, creating a unique and complex cultural blend (see Shihabi (2004)).

The history of modern developments in Saudi architecture has been thoroughly discussed by scholars who have created vast body of literature on the subject. Research on architectural practice and contemporary issues is however lacking (see section 1. 1).

This section briefly reviews the architectural paradigms in SA, which provide the context for this study. Most studies classify Saudi architecture according to three chronological phases:

1. The traditional period: prior to the 1950s, which mainly represents the vernacular architecture created during the pre-unification era.
2. The transitional period: between 1950 and 1970, which followed the unification of the Saudi Kingdom and the discovery of oil.
3. The contemporary period from the 1970s until today: this period marks the development of modern architecture and the introduction of the technology and materials used in today's buildings. The contemporary period saw the establishment of detached, villa type houses and the traditional form of architecture was abandoned with the majority of traditional buildings being demolished.

To some extent, this classification follows Rapoport's categorisation of built forms and the way they are produced:

> "1. *Primitive*. Very few building types, a model with few individual variations, *built by all*.
>
> 2. *Preindustrial vernacular*. A greater, though still limited, number of building types, more individual variation of the model, *built by tradesmen*.
>
> 3. *High-style and modern*. Many specialized building types, each building being an original creation (although this may be changing), *designed and built by teams of specialists*." (Rapoport 1969: 8)

The chronological classification of Saudi architecture presented above is used as a basis in the review that follows. The architectural practice domain in SA is also outlined briefly.

2. 15 Traditional Saudi architecture (pre-1950)

There is no comparison between traditional Saudi architecture and modern architecture. Building approaches, materials, technologies and urban settings have all utterly changed. Traditionally,

> "the planning and design of buildings and facilities were subject to discussions among high ranking decision makers (the governor, the judge and overseers) and master builders as how to address the spiritual, climatic and security issues of developments within available building materials and techniques." (Eben Saleh 1998b: 572)

The form and function of buildings were influenced by social, political and environmental factors. However, changes "emerged with the unification of Saudi Arabia in 1932, evidenced by

the gradual abandonment of structures that showed the dominance of defence" (Eben Saleh 1998b: 572).

Walled towns, constructed for defence purposes, were found in most major cities. They comprised main governing and service buildings with several residential quarters radiating around them. Each residential quarter was independent; each would have its local mosque, a small market and communal open spaces with a main road that linked it with the core of the town (Figure 2.15).

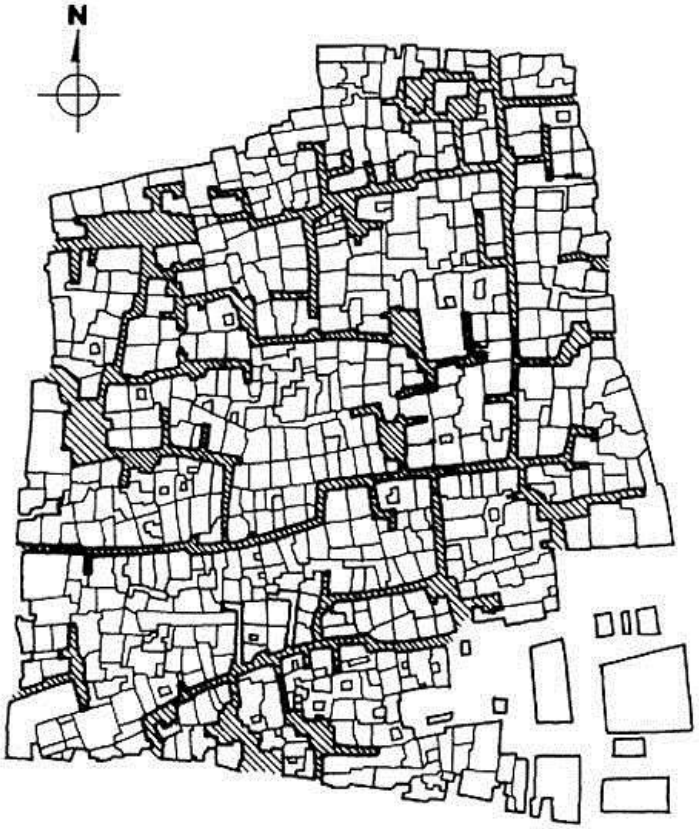


Figure 2.15 A detailed residential quarter in Al-Hasa showing the hierarchy of public, semi-private and private spaces
Source: Eben Saleh (2002: 519)

Privacy was emphasised throughout the design concept of neighbourhoods. Houses were the territory of women, who through Islamic guidance were separated from the public. Residential quarters were, therefore, dense with narrow curvy paths that led to semiprivate cul-de-sacs that acted as an extension to residential life (Figure 2.16). Moreover, houses were oriented inwards, constructed around central courtyards that provided ventilation and light. Entrances to neighbourhoods were kept to a minimum, both for reasons of security and privacy, creating a unified housing fabric that consequently strengthened social interactions (Eben Saleh 1998b).

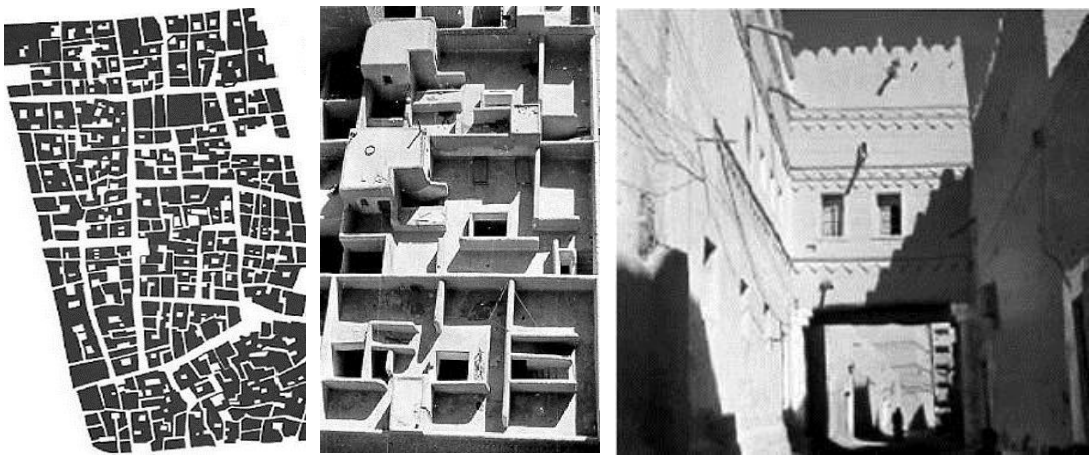


Figure 2.16 The residential quarters in Riyadh were grouped in dense built form of low-rise courtyard houses with narrow winding streets and covered passages
Source: Eben Saleh (2001: 181, 182)

However, with economic changes in the 1950s, massive governmental complexes were built (e.g. ministries, hospitals and associated housing complexes) (Eben Saleh 1998b: 575). Traditional architecture and lifestyles started to change considerably following these changes; the spread of cars was one of the key factors affecting the urban structure, as it meant wider roads were needed (Eben Saleh 2002: 516). These changes were first initiated in Arriyadh (the Saudi capital), afterwards, the remaining cities started to follow. As a result, by the 1970s, the majority of architecture built before the 1950s was "violated and deserted" (Eben Saleh 1998b: 579).

Table 2-4 below, briefly demonstrates the different features of traditional Saudi architecture:

Table 2-4 Traditional Saudi architectural characteristics
Source: Adapted from Shihabi (2004: 59–60)

Saudi region	Building material	Number of storeys	Distinctive features
Central region – extending to the north	Mud bricks, stone, lime plaster and timber.	One to two floors, built around an open central courtyard.	Smaller towns and villages along valleys and water sources. Architecture was influenced by the predominantly hot and dry climate as well as the strict socio-cultural traditions. Dwellings were closely clustered and separated by narrow, internal winding roads to ensure constant shade.
Eastern region	Constructed with thick walls comprising a mix of mud, load bearing stones, lime plaster and timber roofs.	One to two storeys high planned around courtyards.	Wind towers were a distinctive feature, they were placed to catch northern summer breeze.
Western region	Built using coral stone, whitewashed with extensive woodwork in the form of roshans (or rowshans).	Up to five storeys high (Al-Wafi 2006: 91)	Materials and the wooden roshans projecting from buildings' facades (see Akbar (2000); and Akbar (1998: 80–82)).
Southern region (Tihama	Carefully cut local rocks and stones as a main building	Tall buildings of up to five floors in	Mountain typography enjoys a milder climate style is quite different from other

Saudi region	Building material	Number of storeys	Distinctive features
mountains) (see Eben Saleh (1998a) for further details)	material.	certain areas (Eben Saleh 1998a).	regions. Due to the higher level of rainfall in this region, these dwellings were built on relatively higher ground. Their facades had a layered pattern of protruding stones to prevent rainwater from penetrating inwards, giving them a distinctive character.

2. 16 The transitional period in Saudi architecture 1950-1970s

The 1950s witnessed drastic political, social and physical changes in SA. The creation of new municipalities and the construction of new governmental headquarters (using reinforced concrete) outside the capital's walls was a sign of the new developing era (Al-Naim 2008: 131). Furthermore, the allocation of public services in the new quarters created a socio-economic gap between residents of the old and the new quarters. There was an increase in the number of people living in the old districts, they were only able to expand their living into newer areas, while many had to move to the outskirts of the city as there was no adequate housing with proper facilities within the city centre (Eben Saleh 1998b: 579).

Reflecting on the situation during the transformation period in SA's architectural development, Shihabi (2004) states that:

> "The traditional construction methods and materials could not bridge this gap nor could they be reinterpreted to cope with the challenges of a modern city. This paved the way for a variety of architectural trends to reside together in Riyadh. The speed of growth has been such that expediency has often taken precedence over quality." (Shihabi 2004: 60)

As the changes took place, planning agencies and municipalities formed. This led to the replacement of local planning communities and vernacular builders with government planners and professionally trained designers (Eben Saleh 2002: 516; Eben Saleh 2001: 183).

Changes were initially evident only in building materials and the design of wider streets. In the beginning, traditional house concepts were maintained. In the 1950s, several neighbourhood schemes were designed for government and ARAMCO (the Arabian American Oil Company) employees (Eben Saleh 2001: 183; Eben Saleh 1997: 168). The major impact was made by the government's five-year development plans (Mahmud 2007: 38), which was followed by a master plan for Arriyadh in the 1970s.

The common features of the new neighbourhood schemes were the design of a gridiron pattern of residential blocks and individual detached houses, i.e. villas. According to al-Naim (2008: 138), private houses that were funded through the Real Estate Development Fund (REDF)[5] in 1975 were monitored by the government through the Ministry of Municipal and Rural Affairs that had developed strict regulations which imposed the villa form as the only residential option for private houses. This new concept "gave unlimited access of space, creating problems with respect to privacy and climate" (Eben Saleh 2001: 180) (Figure 2.17).

Figure 2.17 A number of villas constructed in the 1950s by ARAMCO Home Ownership Program in Dammam
Source: (Al-Naim 2008: 138)

The new house forms contradicted many of the socio-cultural activities and beliefs; however, they reflected the "obsession with modernity" (Alsayyad 2013: 138) at that transitional stage. They were an indication of being modern and a medium for expressing individualism and uniqueness (Al-Naim 2008: 139). Nonetheless, residents made a number of modifications to the designs in order to adapt them to their requirements. For example, fence-walls were extended in height and trees were planted in front of houses to maintain privacy (Figure 2.18). Balconies, that according to Eben Saleh (1998b: 583), residents considered a means of opening their houses to onlookers, were boarded or blocked. The imposed schemes not only led to physical discomfort but also affected the means of social interaction. As house fronts became open

[5] See Al-Otaibi (2004) for details about housing development in SA and the REDF.

(public) and streets wider and straighter, semi-private spaces disappeared, causing extreme discomfort to families. Women in particular were affected by this new design. Eben Saleh (1998b) stated that:

> "Free movement was hindered particularly for women who were embarrassed to emerge from their homes directly into the public street. Their children had no safe area outdoors to play under supervision, as was previously afforded by the intimate alleyways of traditional environment." (Eben Saleh 1998b: 584)

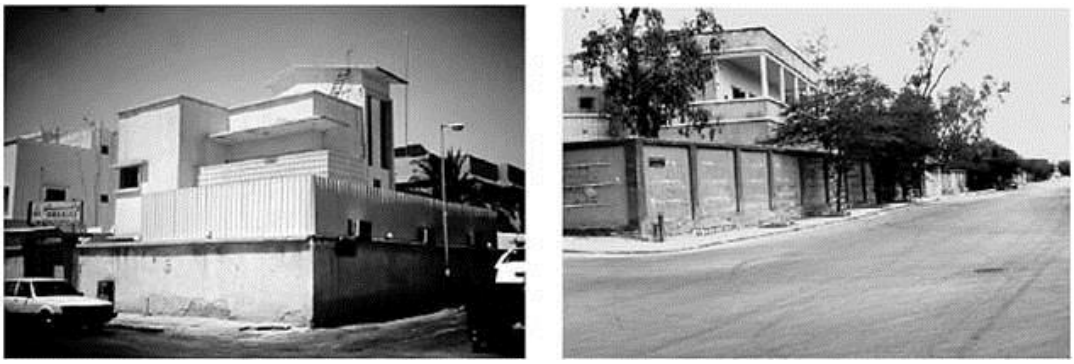
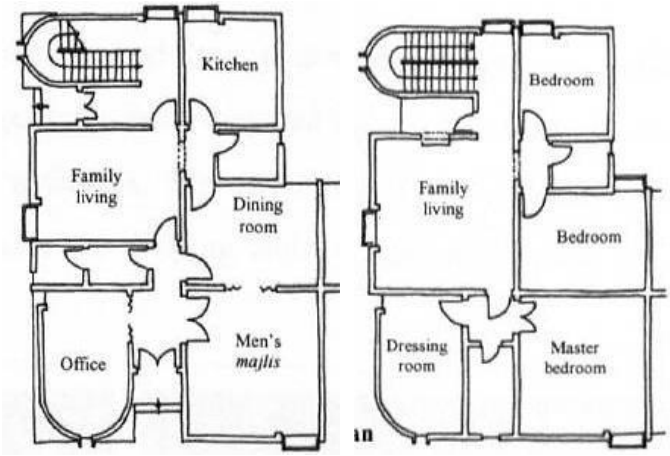


Figure 2.18 Metal screens and natural elements along the fence- walls of villas provide protection against violation of visual privacy
Source: Eben Saleh (2001: 187)

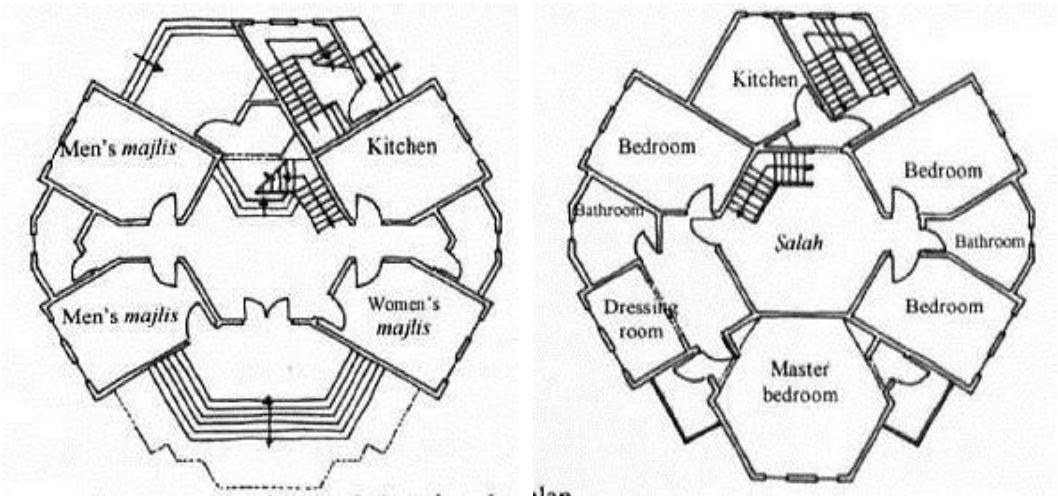
2. 17 Residential Architecture in Saudi Arabia today

Al-Nafea (2006) gave examples of the changing layout and form of Saudi houses in Riyadh and linked them with the role of women in society. The plans (Figure 2.19) show the rapid changes in the layout concepts, sizes and innovative forms which people employed as a way to express individuality and uniqueness.

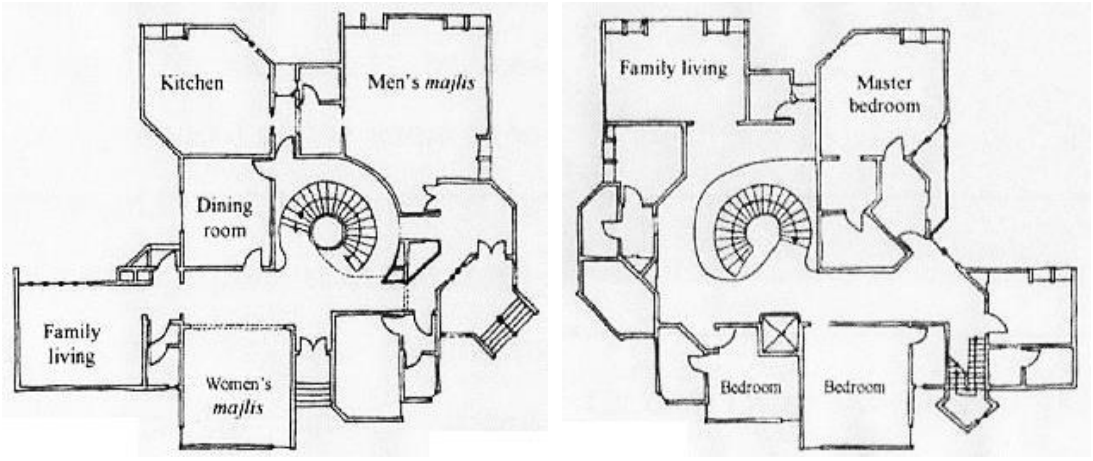
From the 1970s onwards, different approaches were taken in Saudi architectural design. One of the distinctive methods that started to be applied was the integration of traditional and modern concepts in an attempt to recall traditional concepts in contemporary designs. This approach was discussed in a wide range of articles written by Saudi professionals and scholars who criticised the processes and the outcomes of the rapid changes from the 1950s on. Although some architects were bravely supporting the new concepts, their arguments were not as strongly made in publications as those made by parties against the desertion of traditional architecture.



House planned in the early 1980s



House planned in the late 1980s



House planned in the early 1990s

Figure 2.19 different house plans 1980s-1990s
Source: Al-Nafea (2006)

Al-Hathloul and Mughal (1999: 201) believe that western models of master plans (for the new cities) should have been adapted not adopted. They also state that traditions and the contexts of places should be deeply examined before applying any model to urban developments if socio-cultural conflicts are to be avoided. In relation to new designs that are based on old patterns, they explain that "it is not merely copying the style but an intelligent use of principles to develop forms suitable for the time has to be made" (Al-Hathloul and Mughal 1999: 217). Although scholars promote traditional architecture to be used as an underlying concept in new developments, many contemporary buildings evidently merely borrow images from traditional buildings and stick them to façades. Al-Naim (2008: 144) suggests that borrowing features from the past is a trend that has been created by architects not by clients and is a sort of "architectural fashion". Al-Naim's observation may reflect projects which claim to integrate tradition with modernity, but does not apply to, for instance, urban developments of new neighbourhoods that were in fact based on traditional concepts, such as the examples presented by Al-Hathloul and Mughal (1999).

On the other hand, the two subjects of affordable housing and sustainable architecture are the predominating areas being investigated in recent studies concerning SA's built environment. These themes have emerged in response to different economic and environmental issues, and sustainable or 'green' architecture has been motivated and influenced by both commercial and academic considerations. Affordable housing has become a necessity as a result of an increase in population and changes in income levels (Sidawi 2008: 67), however, researchers vary in their areas of focus. For instance, Sidawi (2008) investigated affordable housing in relation to its design criteria, arguing that current designs only take into consideration cost reduction while ignoring the importance and value of an individual's lifestyle in understanding and implementing design approaches. These findings have been supported in an earlier study by Salama (2006), who also developed a framework (Figure 2.20) to support the design approach of desirable, yet affordable, housing in SA. The framework's objective was to assist in the understanding of the population's housing needs through a consideration of the elements of their lifestyle (e.g. privacy, social cohesion and residential preferences).

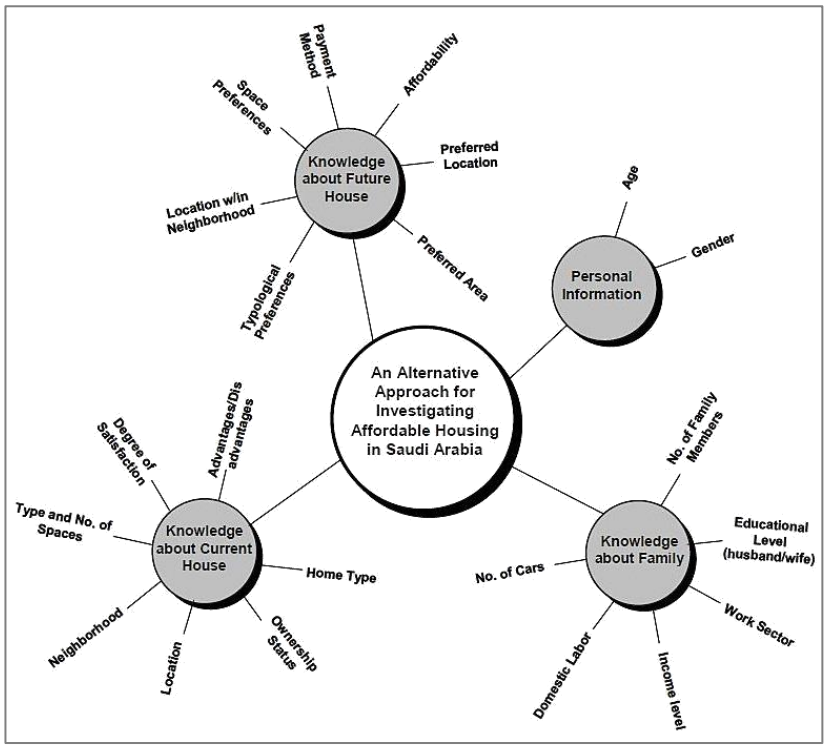


Figure 2.20 Framework for the inquiry concerning affordable housing in Saudi Arabia
Source: Salama (2006: 73)

Sidawi (2011) subsequently studied the impact of financial support offered to low income citizens through banks or the REDF. Sidawi suggested that these loans do not support the ongoing needs and preferences of their beneficiaries, and offered alternative recommendations.

When considering sustainability, different topics focus on differing approaches to sustainable housing. A number of studies have focused on energy preservation/reduction, e.g. Taleb and Sharples (2011) who examined the sustainability of electricity and water in existing Saudi buildings. A more inclusive study was presented by Besheer and El-Hamidi (2013), who developed a model for designing a sustainable average size Saudi villa that integrated all design aspects, including electrical, mechanical and architectural (e.g. the orientation and form of the house, window shapes, efficient insulation, taking advantage of natural cooling/heating and ventilation, etc.). Their objective was to reach a 50% reduction in energy consumption. Aina et al. (2013) presented an integrative approach towards the development of sustainable urban design. Al Surf et al. (2012 and 2013) examined approaches into providing sustainable housing through the integration of SA's cultural features, referring to traditional architectural design concepts and adapting them to suit contemporary building methods and sustainable design measures. In a quest towards the development of sustainable housing that is affordable, or affordable housing with higher sustainable measures, recent studies have begun to combine both

aspects, i.e. affordability and sustainability, e.g. Salama and Alshuwaikhat (2006) and Attia (2013).

The pursuit towards sustainable architectural developments is a relatively recent activity in SA; however, its application on large-scale housing projects will help set a model for smaller development projects and privately built houses. Nevertheless, further public awareness is needed (most probably through media channels) in order to explain both its features and value, and also the affordable application methods that can enhance the built environment. It should be understood that (if efficiently applied) sustainability does not only convey environmental advantages, but equally significantly, it can sustain and enhance the socio-cultural context (see Section 2. 5 for more details).

2. 18 Architectural practice in Saudi Arabia

Architecture in SA is mainly produced through architectural offices: these are the true designers of the built environment. Nevertheless, practices are governed, organised and influenced by a number of institutions that act mainly on national levels. However, the majority of paradigms and regulations are generated in the capital Riyadh (where all ministries are located), along with the backing of the 'Arriyadh Development Authority', which influences many planning and development approaches nationally.

Al-Solaiman (2010), in her PhD thesis on the architectural discourse of Riyadh, dedicated a chapter to the constituents of architectural discourse. She describes the architectural education sector and the organisers and influential stakeholders of architecture in the country. These are represented in the municipalities; the Arriyadh Development Authority; The Saudi Umran Society; the Saudi Council of Engineers; RIBA Gulf; and the Al-Turath Foundation. She also reviewed and presented information concerning architectural media and publications produced in SA. However, Al-Solaiman explains that although the roles and descriptions of these stakeholders may seem straightforward:

> "The sometimes huge discrepancies between what is planned on paper and what exists in reality can complicate such as attempt seeing that when reality falls short of the plans it is very rarely documented or discussed. Furthermore, the roles played by the stakeholders are by no means equal, nor can it be implicitly understood that they are indeed active, as some parties are more productive than others." (Al-Solaiman 2010: 96)

The Ministry of Municipality and Rural Affairs (MOMRA) was established in 1975 (Mandeli 2008: 521). It is "the only governmental body responsible for the physical planning in Saudi

Arabia" (Eben Saleh 2001: 185). Municipalities (which currently act as part of the MOMRA), were previously formed throughout the country between the 1930s and 1940s (Mandeli 2008: 517).

> "Accordingly, lists of duties were assigned to the municipalities. Among these responsibilities were the supervision of the town development, monitoring general housing conditions, regulating the extension and widening of street networks, urban beautification and creation of public space, executing work needed for the enhancement of service delivery, and improving the standards of living." (Aziz-Alrahman: 1985, cited in Mandeli 2008: 517)

However, the planning of neighbourhoods undertook a new system in the mid-1990s. In this process, the owner of undeveloped land (whether from the private or public sector) is required to provide proof of ownership and planning approval from the MOAW (Ministry of Agriculture and Water) and the MOMRA. A consultant is then hired to design the subdivisions of the land in accordance to MOMRA's planning guidelines. MOMRA then review the proposal for approval prior to application (MOMRA: 1994, cited in Mandeli 2008: 633).

More recently, the Statute of the Saudi Council of Engineers (SCE) was approved by Royal Decree in 2002. It is "a scientific professional body independently handling its financial obligations, and operating under the supervision of Ministry of Commerce with headquarters in Riyadh", and branches in other Saudi cities (SCE 2013). The council's key objectives are to set codes and measures for engineering practices and to promote and develop the engineering profession. This also involves the following: licensure; recommending regulations; examinations for accreditation (SCE 2008); researches and publications; arranging specialised training courses and conferences; and the offering of technical advice (SCE 2013). According to the SCE, there are three ranks of engineering offices: 1) engineer office; 2) consultant engineer office; and 3) consultancy engineering office. Architects are classified into four professional grades: 1) architect; 2) associate architect; 3) professional architect; and 4) consultant architect (SCE 2013). However, other academically certified engineering specialities (e.g. civil engineer, electrical engineer, mechanical engineer, etc.) are all accounted for in the council's framework. Architectural issues and architects do not therefore receive precedence or focused attention among other professions. This is an issue that has been highlighted in different media by local architects for a considerable period of time, as they are actively demanding an independent architectural body that is capable of regulating the profession and representing their specific requirements (Al-Solaiman 2010: 112).

According to the classification of the engineering offices outlined above, the architectural office of the third and higher ranks, (i.e. consultancy engineering offices) offer services in more than one type of engineering branch. However, it is a requirement that the main owner has at least 22 years of experience in his/her profession. The other two office ranks may, in contrast, only offer services related to the owner's speciality. These offices need to be authorised through two sectors: 1) the SCE (mainly for accrediting the practitioners); 2) the Ministry of Commerce and Industry (MCI) who provide the licence for the office. Although some legislation exists in relation to architectural practice in SA, there are no clear or defining parameters for organising the practice inside offices, or in terms of clients' relationships, or other systematic processes (including design specification requirements and estimation methods of fees). Moreover, the Saudi building code has been developed and presented in 2007, but has still not been implemented.

Al-Mohaimeed (2009), has analysed the architectural design process of 20 Saudi consultancy engineering offices. She combined the phases and produced an elaborate model of the process; however, the study did not specify a certain type of building. Figure 2.21 demonstrates the main phases in the process. Al-Mohaimeed also identified 91 impediments that can face an architectural design process within the practice: these were extracted through cases under investigation and from the literature. The impediments were classified adapting Chapman's (2001) classification (cited in Al-Mohaimeed 2009: 108), which related the impediments to the management, the tasks, the team, the design and the client. Al-Mohaimeed also added a sixth category, this being technology.

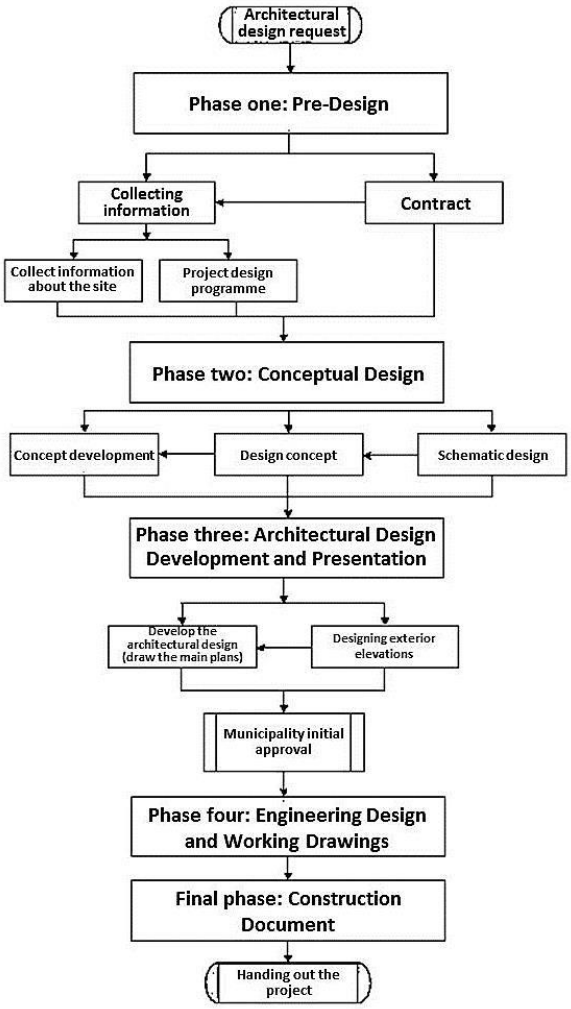


Figure 2.21 Architectural design phases in Saudi offices
Source: Al-Mohaimeed (2009: 49) [translated from Arabic]

2. 19 Reflection on section 3

This section has explored the paradigms in SA's architecture, together with the organising and practicing context. The review demonstrated the variety of SA's traditional architecture and the rapid transformation that has been initiated in the 1940s following the country's unification and the discovery of oil. The influence of Western designs and architectural systems were clearly established in new developments, with the result being an abandonment of the traditional built environment and the accompanying building and design systems.

The differing perceptions, reactions and the design approaches following these changes were also presented in this section, along with some of the socio-cultural impacts that have developed as a result of the new architectural and urban forms. As a final stage, there was an exploration of

recent approaches to architectural developments, along with the latest research directions in examining SA's built environment. This demonstration was then followed by a review of the architectural practice in SA and its organising systems. The review has demonstrated that there is a strong interest in examining architecturally related subjects in the context of SA. However, it also uncovered limitations in the approaches and subjects examined. There has been, for example, a clear gap in studies examining detailed features of the empirical aspects of architectural design and production, since the majority of studies were (with a few exceptions) descriptive and analytic in nature. There is an urgent need to have a detailed and holistic understanding of the practice from the perspectives and roles of both the architects and the users and decision makers, including their potential roles in forming and reforming architecture. Moreover, if architectural designs, residential in particular, are to be enhanced in the region, there needs to be an examination, discussion and development of architectural design approaches that support the Saudi environmental, economic and most significantly the socio-cultural contexts.

2. 20 Chapter summary

A number of the research questions presented earlier in section 1. 2 have been fully or partially answered through this comprehensive review of architectural design subjects. The review was divided under three sections: the first examined the theories and meanings related to houses; the second examined the empirical aspects related to design in general, and residential architecture in particular; the final section focused on the architectural context of the examined area, i.e. SA.

The findings from this comprehensive review demonstrate the extensive range of variables and dimensions linked with residential architecture design, and the incorporated processes and socio-cultural phenomena (i.e. the research subject). However, the need to identify and link all the aspects involved in the production of houses in SA is important for an understanding of the contextual features whereby the houses are produced. This holistic and contextual understanding helps in identifying the sources and causes of any developing problems, and (as a consequence) assists in producing practical and efficient solutions, frameworks, or strategies for the future, and since this is what this research is aiming towards, the following stage examined house design in SA as a holistic phenomenon. However, the next chapter explains first the investigation methodology and the processes applied for gathering, analysing and presenting the data and the research findings. This is then followed by a comprehensive demonstration of the findings, which explain the concepts and phenomena constituting the practice of HD in SA.

Chapter 3
Research Methodology and Process
(Grounded Theory)

3. 1 Introduction

The previous chapter established the background to the examined field through studies relating to residential architecture, design approaches and the architectural context of Saudi Arabia.

The literature has demonstrated paradigms in Saudi Arabia's architecture, revealing rapid changes in forms and concepts, particularly in relation to the design of residential buildings. The discussion revealed major concerns related to changes in identity, traditions and local socio-cultural values and practices, and concluded that if the current low quality of house designs is not addressed, it will continue to contribute to an adverse image of Saudi cities. On the other hand, any new methods of designing Saudi houses needs to correspond to advances in technologies, lifestyles and building standards.

In the absence of practical, well-studied attempts to resolve these issues, inappropriate residential designs, which do not respond to the needs of occupiers and are unsustainable, will continue to be produced. If the contextual settings are not respected during the creation of architecture, many cultural and environmental issues will intensify in both the immediate, and long-term, future.

This research therefore establishes the foundations towards enhancing residential designs. It aims to understand current residential architecture practices in SA and investigates the variables associated with the process, and whether these are related to practical aspects or to the incorporated and embedded socio-culture. An inductive qualitative approach that adapts the GTM (Grounded Theory Methodology) has been applied, and a field study investigation was carried out as part of the data gathering methods.

This chapter outlines the methodology and the followed processes. It begins with a demonstration of these methods, followed by a more detailed examination of the empirical application process, including the field study. In the latter part of the chapter, there is a further examination of the methods used for presenting the findings, leading to a description of the outcome of the research.

The general design of this research methodology (i.e. the data gathering and analysis method and the form of the generated outcomes) has, as far as the researcher is aware, not been previously attempted in architectural studies with similar objectives. This is despite the fact that GTR (Grounded Theory Research) is a systematic and clearly defined research methodology, which can be highly beneficial in many architecturally-related studies. GTR has been widely

applied in sociological studies, and more recently has been adapted for disciplines with a greater technical aspect, i.e. informatics.

However, since no architectural studies employing GTM were identified, the researcher needed to establish a number of procedures through experimentation with different approaches (e.g. selecting the most appropriate technique for classifying and labelling concepts, see Figure 3.9). This required technical expertise and was labour intensive, yet it remained a challenge that was both exciting and rewarding.

This methodology resulted in positive outcomes, leading to the possibility of its adaption by further researchers from the field of design and architecture. However, the researcher welcomes attempts to further examine and evaluate the methods and the processes used to deliver them in this research, in order to ratify or further enhance the applied methods.

3. 2 Research design

This research is mainly focused on the gathering of qualitative data, since its interest is in the contextual understanding of processes and meanings rather, than the generalisation of findings from calculating frequencies of variables. The gathered data is utilised to generate concepts and establish the relationships between them, i.e. an **inductive** approach (as opposed to a deductive approach where an existing theory is revised through examining a hypotheses, taking into account that induction "contains a deductive element too") (Bryman 2004:8-10, 284).

The main stakeholders in the private HD process are: 1) practicing architects in Saudi architectural offices; 2) members of governmental bodies involved in setting building legislations and the development of residential architecture in Saudi Arabia; and 3) homeowners. Samples from these groups have been selected, based on the GT data gathering and sampling methods (see sections 3. 3 and 3. 4).

The main area of investigation in this study is referred to as the 'unit of study', a term drawn from GTR methodology. This acts as the research frame, providing the flexibility needed for the process of GTR, while assisting the researcher maintain focus in order that he/she can manage the progress of the research (Birks and Mills 2011: 25). The unit of study here involves the Saudi residential design context and its processes (with special attention to the privately built houses), along with the incorporated socio-cultural concepts and phenomena. Later, during the data gathering and analysis process, *variables* of the *unit* emerge; unlike in other methodologies

where a prior fixed/confirmed list of variables is investigated. Further clarification is presented when explaining the data analysis process in section 3. 7.

Grounded theory methods have been adapted for this research process. These methods are explained in section 3.2.3, and further details of their application is explained under the field study process (section 3. 6).

3. 2 The Grounded Theory Methodology (GTM)

Grounded theory was first introduced by sociologists Glaser and Strauss in 1967 in their book "The Discovery of Grounded Theory: strategies for qualitative research" (Glaser and Strauss 2008). This book was the start of many other publications both by these authors and additional scholars, resulting in several thousand publications reporting on qualitative studies using GT methods. These studies investigate human subjects in certain contexts, including doctoral research (Birks and Mills 2011: 1, 47; Bryant and Charmaz 2007: 1).

Although it began with sociological research, in the mid-1980s GTR spread to other disciplines such as informatics, a discipline that is a part technical and part social (Urquhart 2007: 339; Urquhart et al. 2009). In architectural and design studies, the classification could be similar to that of information systems, since they both combine technical and social aspects. However, the researcher was unable to allocate any art and/or design related studies that used GTR as their main methodology, and only a small number using GT methods, i.e. those used for data analysis (Lee and Park 2011; Amor 2006). This is despite the fact that most design and architectural research has social/human elements within its context and many of the studies they apply discuss social phenomena, thus raising the potential for GTR to be a strong contender in research methodology.

On the other hand, it is common to employ GT methods with other research methodologies, due to the value gained through their use, particularly in the systematic data analysis process presented by the GT methodology. This is commonly known as the 'coding' system/method, and is mainly used with qualitative data (Birks and Mills 2011: 29-30). In such cases, the research methodology should be classified as a 'selective' or 'mixed-method' research. Nonetheless, some still refer to a selective/mix methodology as GT, as they have employed associated methods. These approaches are more likely to result in an exploratory or descriptive outcome, rather than an explanatory theory (Birks and Mills 2011: 16).

3.2.1 Defining the 'Grounded Theory' research methodology

Glaser and Strauss (2008: 2) (the founders of grounded theory methodology) define it as "the discovery of theory from data systematically obtained from social research". Nunes et al. (2010: 73) give a more detailed definition of GT methodology, stating that GTR is:

> "A research methodology in which theory and models are inductively extracted from the analysis of contextual data. This analysis involves the iterative discovery of concepts and tentative explanations of phenomena, as theory emerges from data. Because there is no preliminary testing or replication of any a *priori* theory, the method stands for its dedicated grasp of substantive areas, which is not static and suffers alterations with the discovery and constant comparison of new data, until sufficiently stable defining properties, explanatory categories, and linking sets of relationships are achieved." (2010: 73)

The aim of GTR is not only to describe or explore phenomena, but also to explain them. This systematically achieved explanation is presented in the form of a theory grounded in evidence.

3.2.2 Why the 'Grounded Theory Methodology'?

Grounded theory is a qualitative research methodology used in cases where little is known about a subject, and where there is a process that can be explicated through its methods to form a theory grounded in evidence (Birks and Mills 2011:16).

Through this research's investigation, no studies explaining contemporary HD processes in SA were identified. Only few studies outlining architectural practice in the region with little discussion of the process exist, so little was known and written about the subject. The GTR methodology was mainly selected due to the fact that the main characterising feature in its process is the generation of concepts from the examined phenomenon. This feature assist in identifying the concepts and phenomena constituting the phenomenon of designing privately built houses in SA.

On the other hand, the development of a theoretical outcome is considered a supportive feature in this research; its main objective is rather to explain the concepts and processes found in Saudi HD. Due to the large number of categories in the examined phenomenon (23 category), the outcome is too descriptive. The construction of a profound theory, has to be formed through a manageable number of categories, i.e. about five categories are considered adequate (Merriam, 2009: 187). The idea behind this, is that the fewer categories are used, the easier to demonstrate relationships, thus, the higher the level of abstraction (Merriam, 2009: 187). Nonetheless,

adopting the methodology for theorising architectural phenomena in the future is something that must be looked into with serious intention.

The objective of this research is to provide not only an exploration, but an explanation of the examined phenomenon. This is presented through a number of forms (explained later on), the aim from these outcomes is to advocate developments on both theoretical and applied extents as explained later on.

The primary reference adapted for this research's methodology is Gro*unded Theory: A Practical Guide* (Birks and Mills 2011), along with further publications reviewed and cited in this chapter. This selection was based on the recent date of the book's publication, as it enables the authors to distinguish between that which has been presented in earlier GTR publications, using an approach that is both straightforward and practical.

3.2.3 Methods for Grounded Theory research

Although the two terms 'methodology' and 'methods' have an interwoven relationship, it is important to clarify the difference between the two terms embraced in this research. Corbin and Strauss (2008: 1) define *methodology* as "a way of thinking about and studying social phenomena", and *methods* as "techniques and procedures for gathering and analysing data". Birks and Mills (2011: 4) use a similar definition for *methods*, but provide a broader definition for *methodologies*, stating that a *methodology* is "a **set** of principles and ideas that inform the design of a research study".

There are a number of essential methods required to be followed in GT methodology, if it is to be adopted as the main methodology. A selective approach to one or more of its methods is not generally considered a GT methodology, but rather a selective/mix methodology (see section 3. 2 p. 84). Figure 3.1 summarise these GTR essential methods.

It is notable that (unlike the majority of research methodologies that follow a linear process) a number of methods in GTR overlap or, more precisely, *interweave*. Figure 3.2 illustrates the interwoven relationship between these methods.

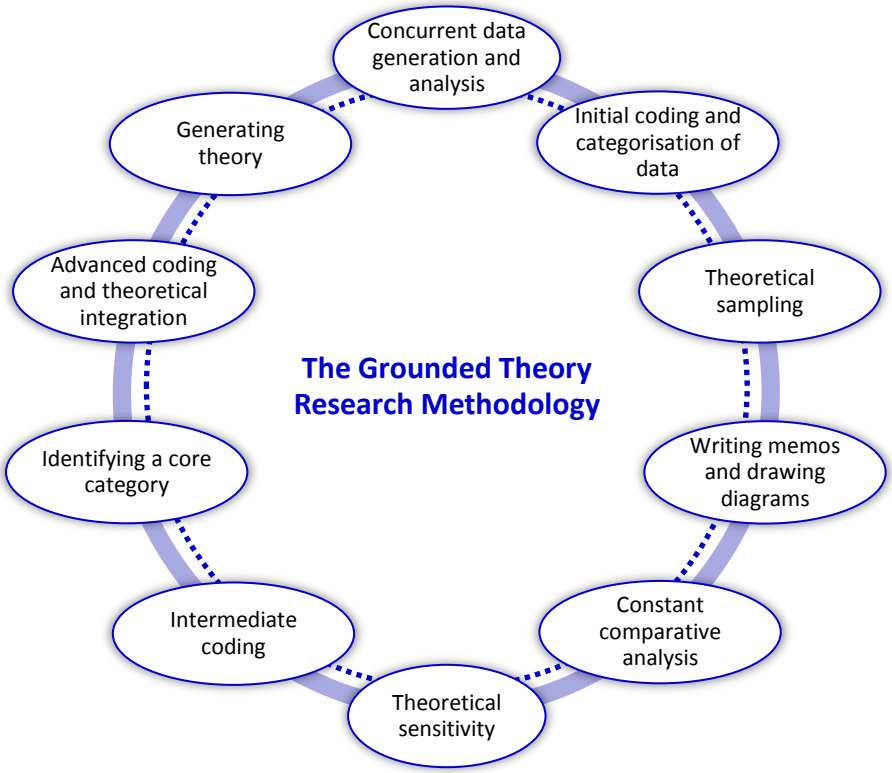


Figure 3.1 Methods in GTR methodology

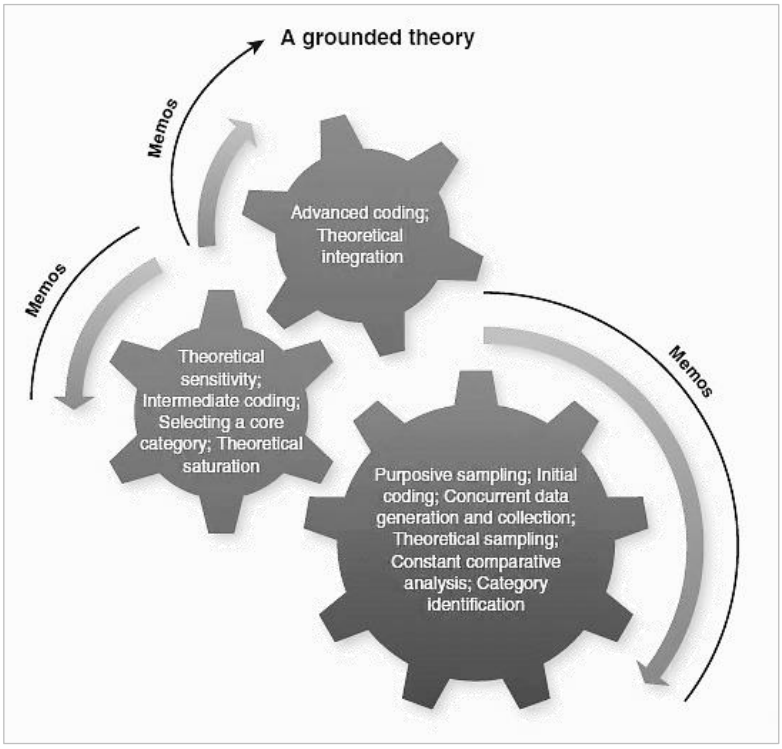


Figure 3.2 Grounded theory methods as a process
Source: Birks and Mills 2011: 13

The following points provide an overview of GTR methods, including further details on the processes whereby these methods were applied in this research.

1. **Concurrent data generation and analysis**: In the GT method, the researcher collects initial data purposefully and open codes them into concepts, which are then used to generate further data. This is unlike alternative methods where data is collected initially then analysed, or where data is collected to test the hypothesis of a constructed theory.
2. **Initial/open coding and categorisation of data**: This is the first step of data analysis. It involves the breaking down of data into important concepts through identifying certain words or sentences, which are then labelled accordingly. A group of labelled **concepts create categories**.
3. **Theoretical sampling**: This is an interactive process through which the researcher chooses the source of his/her following sample/s according to the generated data/concepts by making "a strategic decision about what or who will provide the most information-rich source of data to meet their analytical needs" (Birks and Mills 2011:11) (see section 3. 4 for further explanation and for the empirical application of this method in the present research).
4. **Writing memos and drawing diagrams**: The literature concerning GTR methodology emphasises the value and important role of memos. Memos (and likewise diagrams) not only represent thoughts, but they: "are working and living documents. When an analyst actually sits down to write a memo or do a diagram, a certain degree of analysis occurs" (Corbin and Strauss 2008: 118).

Memos are records of researcher's thoughts, feeling, insights and ideas concerning the subject and the data emerging during the research process. They vary in type and length, and (as previously indicated) are important for generating GT findings. Detailed and elaborated memos then make up a proportion of the outcomes.

Diagrams are a "conceptual visualization of data…diagrams help to raise the researcher's thinking out of the level of facts" (Corbin and Strauss 2008: 124-125). There are a number of advantages that can be gained through the use of diagrams (see Corbin and Strauss (2008: 124-125)). Most significantly, diagrams motivate researchers to think about data in further depth, which enables the analyst to "[have] it all together" (Corbin and Strauss 2008: 125).

Like memos, early diagrams are simple and less descriptive: they assist researchers in thinking about relationships instead of elaborating on them. The researcher should develop a *system* that allows easy tracking of memos to be cross-referenced in advanced stages when needed (Birks and Mills 2011: 44) (see section 3.6.3 for the system used in this research).

5. **Constant comparative analysis**: This is a process that continues until the final theory is formed; it is the process of comparing concept to concept, codes to categories, categories to categories, and categories to the core category. Building up the final theory is created through this process of constant comparison.

6. **Theoretical sensitivity**: A portion of this is related to the researcher's level of understanding of him/herself and the subject under study. The other part reflects the researcher's intellectual history and the ways in which this is used in his/her everyday thinking. As data accumulates and the researcher is immersed within it, his/her level of theoretical sensitivity increases. There are a number of methods or "*analytic tools"* as named by Corbin and Strauss (2008: 67-85) by which to increase theoretical sensitivity (see Birks and Mills (2011: 61-62) for a brief list).

7. **Intermediate coding**: This is a major activity following the initial coding process (explained in p. 88). However, throughout the analysis and comparison process the researcher is moving between the initial and intermediate coding. During this process, the objective is to form further abstract categories through the grouping of sub-categories (i.e. category properties), and also to link categories with each other.

8. **Identifying a core category**: After the development of categories in the intermediate analysis stage (and not necessarily before identifying all categories) the researcher may select a core category that explains the GT as a whole. A core category is the category able to incorporate all remaining categories.

9. **Advanced coding and theoretical integration**: This is the most difficult stage to accomplish:

> "A grounded theory generally provides a comprehensive explanation of a process or scheme apparent in relation to particular phenomena. It is **comprehensive because it includes variation** rather than assuming there is a one-size-fits-all answer to a research question." (Birks and Mills 2011)

Both the storyline technique (Strauss and Corbin 1990) and theoretical coding (Glaser 2005) may be used in advanced coding. With theoretical coding, codes can be drawn from existing theories. This assists with the integration process, and adds strength to the final product by situating it within an existing field of knowledge. However, researchers are advised to avoid using external theories until their own theory is developed (Birks and Mills 2011; Glaser and Strauss 2008). (Further explanation is presented in section 0 during the discussion of the bases for developing the theory).

10. **Generating theory**: The final product of a GT methodology is a "grounded theory that explains a process or scheme associated with a phenomenon" (Birks and Mills 2011: 12). However, not all GT researches end up with an identified 'grounded theory'. Theories produced through this methodology are classified into three types, in relation to the level of abstraction represented: 1) narrow concepts; 2) substantive theories; and 3) formal theories. A further explanation of these types/levels of theory is presented in the following section.

3.2.4 Theory-levels produced through GTR

Urquhart et al. (2009) have reviewed the GTR paying particular attention to the production of higher level theories. They suggest guidelines that will help raise the quality of grounded theory studies in an information system, stating that "grounded theory views the process of theory generation as one of increasing the level of abstraction, range and scope of the theory" (Urquhart et al. 2009:363). In their study, they review and define the three levels of theory (Figure 3.3) that can generate through GTR, as follows:

1. **Narrow concepts**: with the least range and scope, these have a limited use as they are, but are central to beginning the process of theory development.

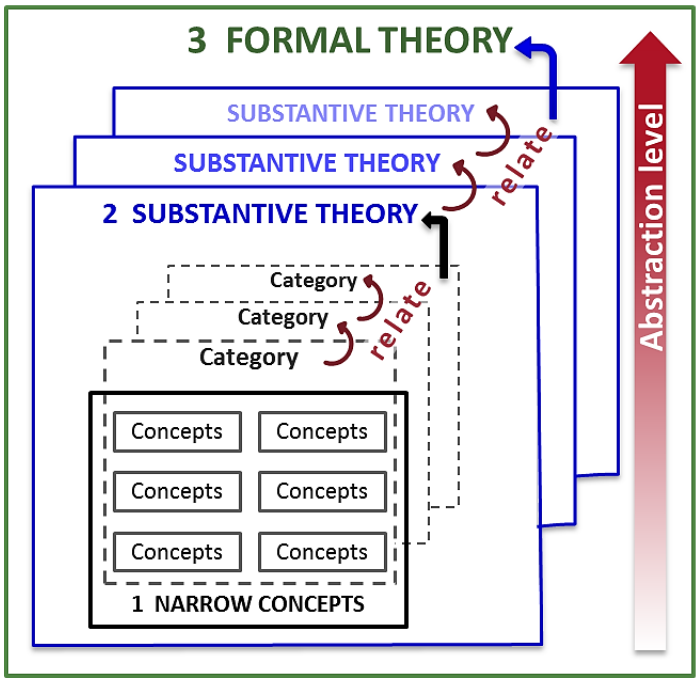


Figure 3.3 Theory-level development in the GTR
Source: Adapted from Urquhart et al. (2009: 364)

2. **Substantive theories**: through the generation of categories:

> "The researcher has made many rejections, inclusions, and inferences. The whole now has to be related in a coherent and cohesive way, because it is integral to seeking understanding. The whole of what will be called a substantive theory is a refining of data to categories of the many instances analysed." (Adelman 2010: 908).

Substantive theories are "theories that have been generated from within a specific area of enquiry using grounded theory methods... They apply to the substantive area of enquiry, but are independent of and beyond the data analysed and the incidents observed" (Urquhart et al. 2009:363).

On the other hand, substantive theories are not sufficiently abstract to be generalised and applicable in other disciplines. Nevertheless, substantive theories are essential in developing high-level/formal theories (Glaser and Strauss 2008: 79). This is examined below.

3. **Formal theories**: these provide the highest level of conceptual abstraction (Figure 3.3). The range and scope of the theory increases, usually spanning a number of substantive areas (Birks and Mills 2011: 174; Urquhart et al. 2009: 364, 368). This level can be achieved through comparative analysis between two or more substantive theories, and between theoretical ideas from different cases (Glaser and Strauss 2008).

Glaser and Strauss (2008: 42) give an example of elements from the two types of theory, for instance, the category 'social loss of dying patients' is of a *substantive* level, whereas 'social value of people' is the *formal* representation of the same phenomenon.

Therefore, the theory generated through this study certainly goes beyond the level of *narrow concepts* and reaches the *substantive* level. The future development of many substantive theories from the field of architecture in the region, will lead to the ability to form theories explaining local phenomena on a high level of abstraction.

3.2.5 Data 'gathering' and 'collecting' in GTR

In grounded theory research, almost any form of information can be considered valid data. However, in order to obtain quality and credibility gathered data should have depth, relevance, and be substantial and rich (Charmaz 2006: 18).

The term data 'gathering' is frequently observed in GTR texts. Birks and Mills (2011: 73) demonstrate the differences between the term '**gathering'** and '**collecting'**, stating that in data

'gathering'; the researcher is directly engaged with the data source, while in data 'collecting' the researcher has limited influence over the source.

There are a number of data gathering and collecting techniques commonly found in GT research (Corbin and Strauss 2008: 27). Interviews, focus groups, field notes and memos are examples of data *gathering* techniques. Literature, documents, questionnaires and surveys, diaries and logs, visual media, music and artefacts, artwork and secondary data (i.e. data that has been collected in the past for other reasons) are all data *collecting* techniques or *sources*.

However, when used independently, such data *collecting* examples are considered "static sources" (Birks and Mills 2011: 79). This does not support theoretical sampling and the emergent nature of data. It is therefore recommended that if these techniques are employed for a GTR it is more appropriate for them to be combined with a separate data *gathering* technique[6].

In this research, the majority of data employed was *gathered*, as outlined below (section 3. 3). Nonetheless, a proportion of data was *collected* from a variety of resources, mainly official documents, literature, and previous PhD studies. All data types were subsequently integrated in the investigation process where this was both appropriate and beneficial.

3. 3 Employed data 'gathering' techniques

The majority of the data for this research was gathered through a field study. Field studies are important components in GTR, whether for interviewing participants in their own contexts, or to undertake observation and informal conversations. A field study is an ideal approach for investigating phenomena with "sociological and human elements" (Birks and Mills 2011: 77). It assists researchers in becoming more aware of the true nature of examined contexts and the ways in which they operate in day-to-day life.

The following points outline the data gathering techniques employed in the field study for the current research, including interviews, a focus group and field notes. Extended information on the empirical application of these techniques is discussed in relation to the field study in section 3. 6.

[6] For detailed information on the advantages and disadvantages of each data collecting technique and data sources for GTR see Corbin and Strauss (2008) (chapter VII) and Birks and Mills (2011: 79-85).

3.3.1 Interviews

This is the most popular data gathering technique adopted in GT research, since it supports the concept of data generation and the theoretical sampling process. The activity of interviewing is similar to that used in other interpretive studies. However, the objective here is to identify concepts. Therefore the researcher is required to be particularly sensitive (theoretically sensitive – see p. 89) to emerging concepts during an interview.

Questions asked in interviews for GTR can vary in type and form between what is asked and how it is asked (Birks and Mills 2011: 75), i.e. they are unstructured. Unlike in other deductive researches, where variables are often fixed and the researcher is bound to their limitations, the questions vary depending on the emerging information and the characteristics of a participant.

Nonetheless, interviews can be individually structured (i.e. a fixed set of questions) or unstructured (i.e. allowing the emergence of new questions or development from existing questions). This depends on the researcher's ability to follow the routes proposed by the interviewees (Birks and Mills 2011: 75). However, in GTR the less structured the interviews, the more effective they prove to be, due to the reasons previously discussed.

When conducting an unstructured interview, the researcher needs to remain focused on the unit of study (see section 3. 2) and careful not to follow an interviewee's lead in a direction that may be irrelevant or misleading. This could potentially affect the data gathering and analysis process.

Interviews have been the key method adopted for this research's data gathering process. They include a variety of residential architecture stakeholders, i.e. architects, interior designers/architects, representatives from relevant governmental sectors, homeowners and residential developers (detailed information concerning this process can be found under sections 3. 4: Sampling method, and 3.6.2: Interviews procedure and strategies).

3.3.2 Focus groups

According to Birks and Mills (2011: 76-77), the generation of valuable categories for GTR is assisted by the engagement and interaction of a focus group sharing certain interests. Moreover, the technique may be used on its own or to begin the initial concept generation, which is then followed with individual interviews, depending on the objectives and accessibility to participants.

However, when applied to GTR, this technique has its own issues. These difficulties that may occur in managing the group and an ability to identify concepts and (particularly with larger groups) to record the conversation. Birks and Mills (2011: 77) advise novice theorists "to use focus groups with caution".

A single focus group was conducted for the purposes of this investigation. It was held with senior interior design students (i.e. from the final year of a five-year bachelor degree programme) at the University of Dammam. The chosen students had undertaken four years of training with different projects and approaches to teaching, and their experience was therefore expected to support the discussion with a variety of examples and case studies.

The objective of this focus group was to support the main investigation stream through providing an insight into the application of regional/traditional concepts and styles in design education. In addition to questions concerning the availability and accessibility of resources, questions were posed along the lines of the following: (1) To what extent are traditional designs encouraged in design projects?; (2) In what ways are they approached by both instructors and students?

The sample was selected due to its convenience to the researcher[7]. It is also noteworthy that, although the researcher acknowledges the role of architecture and interior design education on residential design practice, it was not a core subject in this investigation, since it requires dedicated and specialised research.

3.3.3 Field notes and memos

Field notes and memos are techniques used to record observations, as well as sequences and incidents occurring during, and between, interviews. As mentioned previously (in the section on interview technique), notes are important for recording the non-verbal reactions of participants, alongside descriptions of the physical context and the researcher's own initial response.

[7] The researcher taught at the department for nine years and this research is sponsored through a scholarship from the same university. Working there for nine years after studying at the same department for five years offered the researcher a comprehensive understanding of the context. More significantly, it provided her with direct access to interviewees and samples of teaching material and students' projects.

The length, complexity and forms of memos develop as the investigation progresses. They develop from short descriptive notes to elaborative explanations of phenomena and their analytic relations to each other (Further details on field note memos during this investigation is presented in section 3.6.3).

3. 4 Sampling method: theoretical sampling

Probability sampling (which uses systematic techniques to determine sample selections) is "rarely employed in qualitative research based on interviews" (Bryman 2004: 304). On the contrary, non-probability sampling techniques are the most common in qualitative researches. They are used when "there is no accessible sampling frame for the population from which the sample is to be taken" (Bryman 2008: 184-185). Unlike probability sampling, the main focus of non-probability sampling is the development of ideas by comparing concepts to enrich the properties and dimensions of categories "rather than boosting sample size" (Charmaz, 2000 cited in Bryman 2004: 305). This is the most appropriate means of fulfilling the objectives of this current research.

Theoretical sampling is a unique method of GTR. It supports the inductive approach of this research, where data is gathered to identify concepts. The most common definition for theoretical sampling is the original definition, stated by Glaser and Strauss (2008: 45) as follows: "The process of data collection for generating theory whereby the analyst jointly collects, codes, and analyzes his data and decides what data to collect next and where to find them, in order to develop his theory as it emerges".

Theoretical sampling differs from methods used by other research methodologies, where the objective is to test hypothesis or theories. In such cases the sample type, size and method is arranged during the planning phase of data gathering, "and sampling is directed at securing a representative data profile" (Birks and Mills 2011: 69). With theoretical sampling, the aim is to gather data that will construct categories that will then build the outcomes. Dey (2010: 186) describes theoretical sampling "as a tool of theoretical exploration not confirmation…an instrument for generating theory, not investigating cases".

Constant comparative analysis is associated with theoretical sampling. It raises questions about what is obvious, what is clearly missing, and if something new/hidden is suggested through what is being said or observed (Birks and Mills 2011: 69). Based on this continues comparative analysis, new questions develop and the researcher is guided to the next useful source of data in

order to fill in any gaps that might occur. The sampling process carries on throughout the data gathering and analysis process until *saturation* is reached (see 3.4.1 for Theoretical saturation).

Theoretical sampling does not imply predetermining population groups that separate categories logically. However, sampling within a group is useful for verifying findings of a particular category (Covan 2010: 63), i.e. to provide confirmation and/or additional explanation of that category's properties. On the other hand, theoretical sampling "uses many different comparison groups" (Covan 2010: 64). For example, in this research, although stakeholders of residential architecture were identified early in the investigation, the sampling process did not predetermine a fixed group of who, or how many, would be interviewed. Instead, constant analysis between interviews guided the researcher to the source of data that would next provide the information required. Nonetheless, sources remained within the identified stakeholders. The research has limitations and boundaries, i.e. the 'unit of study' (section 3. 2).

An example of this argument can be found within the selection of interviews carried out with the developers. Developers are not directly related to the group under investigation (i.e. architects who design private houses and homeowners who have had a role in their the design of their house). However, in order to compare and verify certain properties, interviews were undertaken with both residential developers and architects whose main focus of design was large housing projects.

An ideal theoretical sampling method would be to generate data through a single source, followed by an analysis. However, this is not always applicable, with the process hindered by factors such as accessibility constraints related to geographical or institutional locations and the availability of participants. In these circumstances, field notes and memos are not only a practical solution, but one that is recommended (Birks and Mills 2011: 71). The researcher should do his/her best to overcome any obstacles. Corbin and Strauss (2008: 58, 150) suggest that if this is not possible, the researcher should accept the data he/she can obtain but ensure that this is made clear in the research, outlining the obstacles and their effect on the outcomes.

3.4.1 Theoretical saturation

The term 'saturation' is used a number of times in this chapter. It was first introduced by Glaser and Strauss (2008) in their first edition in of 1967, to describe the stage at which the researcher can cease theoretical sampling and data gathering. Theoretical saturation is reached "when

further data collection fails to add properties or dimensions to an established category" (i.e. major categories) (Birks and Mills 2011: 115).

In this current research, properties were accumulated through a variety of sources. Variation helps in identifying a wider array of dimensions. For example, when obtaining data related to 'style selection' in HD, developers and practice organisers were questioned during the focus group, alongside students and architects/interior designers from different backgrounds. This provided a wider perspective into the 'style selection', which is a major category of this investigation. As a result, not only properties describing the different styles used in Saudi houses were revealed, but also other dimensions that had not necessarily been part of the initial enquiry. Some of the emerging properties relating to 'style' consisted of reasons behind selecting a style, sources for styles, issues in the selection process and with the chosen styles, understanding of this subject, etc. Subsequently, the judgement of saturation levels being reached was taken with confidence whenever a category was reviewed, since properties were investigated through an array of sources.

The researcher ensured that major categories were saturated. It is also clearly stated if any gaps were identified during the advance stages of analysis and discussion, and where returning to data sources was inconvenient due to limitations of time and access. Where appropriate, any information lacking is also added as recommendations for future research at the end of this study.

3.4.2 Sample size

Although saturation sets the boundaries concerning the number of sources adequate for a study, there is still a debate concerning the size of a sample in qualitative research. Mason (2010) investigated a sample of five hundred and sixty PhD studies using qualitative interviews for their sample sizes. Results demonstrated that the mean sample size was thirty-one. However a substantial proportion of these studies revealed a non-random selection, as they presented sample sizes in multiples of ten. Mason discusses these results in relation to saturation, finding that the sample sizes suggest a pre-meditated approach that is not congruent with qualitative research principles. He consequently criticises PhD studies that predetermine sample sizes while not adhering to saturation measures for defining sample sizes, and suggests a number of reasons that might have influenced such attempts.

Nevertheless, Mason (2010: 17) concludes that when the importance of saturation is understood, students and supervisors:

> "Can make properly informed decisions about guiding their fieldwork and eventually closing their analysis. Alternatively, if this has to be done before saturation is achieved, they are better able to understand the limitations and scope of their work. Either way, this will contribute to a fuller and more rigorous defence of the appropriateness in their sample, during the examination process." (2010: 17)

On the other hand, Guest, Bunce and Johnson (2006: 61), found only seven sources that provided guidelines to sample sizes when it comes to interviews. The following points demonstrate some of these findings:

- Qualitative research: Bertaux (1981) argues that 15 is the smallest acceptable sample size. Kuzel (1992: 41) links his recommendations to sample heterogeneity and research objectives, suggesting 6 to 8 interviews for a homogeneous sample and 12 to 20 data sources "when looking for disconfirming evidence or trying to achieve maximum variation."
- Grounded theory studies: Creswell (1998) suggests 20-30 interviews, while Morse suggests approximately 30-50 (1994: 225).
- Ethnographic studies: Bernard (2000: 178) suggests 30-60 interviews, while Morse recommends 30-50 (1994: 225).
- Phenomenological studies: Morse (1994: 225) recommends at least 6 participants and Creswell (1998) between 5 and 25.

Romney et al. (1986:326 in Guest et al. 2006: 74)

> "Found that small samples can be quite sufficient in providing complete and accurate information within a particular cultural context, as long as the participants possess a certain degree of expertise about the domain of inquiry ("cultural competence")… (they) calculated that samples as small as four individuals can render extremely accurate information with a high confidence level (.999) if they possess a high degree of competence for the domain of inquiry in question." (Guest et al. 2006:74)

In practice, PhD researches investigating Saudi Arabia's architecture (and on subjects close to the area of this research) used different data gathering methods. Nevertheless, their primary interest has been analysing buildings/sites within a specific theme, e.g. Al-Naim (1998) examined changes in house designs as an element linked to their owner's identity. In such

studies, buildings form a primary data source, whereas interviews are a supportive source. Nafea (2006) followed a similar approach using case studies when she examined women's role in the design of Saudi houses, accompanying her data gathering methods with questionnaires and interviews. Akbar (1998) studied homes and furniture use and meanings in different Saudi eras and also used a combination of space analysis and interviews.

Both of the latter researchers indicated that interviews are a difficult procedure to undertake in Saudi Arabia, particularly when questioning and assessing individuals in relation to their homes. This is due to the highly conservative nature of Saudi culture. Their interview sample sizes for obtaining data concerning the traditional home were six and eight respectively. Akbar (1998), however, carried out a further ten structured interviews when examining the context of contemporary homes. His approach of using structured interviews was also partially a result of the difficulties he highlights concerning issues of accessibility.

In conclusion: this research focuses on, and seeks explanation of, the question of HD and incorporated socio-cultural concepts and phenomena. Qualitative methods (i.e. semi-unstructured interviews) are the most appropriate means of investigation when it comes to both socio-cultural phenomena and HD processes. As previously discussed, this is in order to allow the emergence of data. The size of the interviewed sample was determined by the saturation of major categories (as explained in section 3.4.1 above) and by the limitations of the field-study and research. The representation of the findings is not intended for generalisation to population but rather to theory, as detailed below in 3. 5 l. The validity of the sample and its size was therefore confirmed through the methodological criteria.

3.4.3 Theoretical sampling application

Initially, a **purposeful** interview is chosen based on the area of focus (e.g. with a member experiencing the phenomena being studied). The emergent data through this interview will generate data relating to the subject, which will require further elaboration, clarification, or confirmation (Birks and Mills 2011: 70).

Theoretical sampling in this investigation has led to a range of data sources. The objectives of the research, along with the initial literature reviews, have led to the decision concerning the first selected interviewee. Dr. Mashary Al-Naim was selected due to that fact that he is himself a practitioner with varied knowledge and experience in the field of architectural practice in SA. In addition, as a university professor who holds a PhD degree in architecture, Dr. Al-Naim

possesses considerable theoretical knowledge, and his thesis was on identity transition in homes. He is also a critic who has been widely published in local and international media. The questions for Dr. Al-Naim covered general aspects of architectural practice, followed by specific queries concerning his residential design approach and process, illustrated by examples. However, other topics also emerged through general conversation, some of these led to different questions that were then integrated into the following interviews.

Data was subsequently gathered through twenty-four main interview sources, in which extended interviews were undertaken with a key member and, in some cases, with a further member from the same source (see Table 3-1). Interviews lasted between thirty minutes and two hours. Additional isolated data was also obtained through individuals contacted to answer specific questions or in order to lead to another participant, and participants who provided only their house plans and some basic information. This was in addition to secondary data obtained through a specialised conference[8] attended by the researcher during the first field study. Nevertheless, data from other sources (e.g. literature, documents and field observation) have been acknowledged as part of the process. Table 3-1 shows a brief list of the interviews carried out in accordance with the sequence in which they were held.

[8] The First International Conference for Urban Heritage in the Islamic Countries. The conference was held in Riyadh, SA in May 2010. It was sponsored by the Saudi Commission for Tourism and Antiquities (SCTA).

Table 3-1 Interviews list

no.	Code	Occupation	Key characteristics	Notes
1	A1	Architect, academic, and other posts.	Saudi, partner in the office.[9] Meets and designs for clients. He has academic work and other specialised experiences. Married and eldest son is an architect.	High-standard engineering office- high fees
2	A2	Architect with secondary academic experience	Saudi, male. Owner and director of the practice. Regional experience. Juror in academic design exams.	High-standard engineering office- high fees. Has an interior design section managed by a Saudi female interior designer.
3	H1	Homeowner	Female owner. Has 3 adult children who live in different locations. She just completed designing her new house.	A2's client
4	A3	Architect, employed	Young Saudi architect. Carries out a variety of tasks in the office, e.g. meets clients, designs and portfolios projects.	High-standard engineering office that deals mostly with large projects, e.g. housing complexes rather than private houses
5	A4	Architect, partner	Saudi, male. Partner in the office and has a different day job in a company.	Medium-standard engineering office that charges medium fees.
6	H2	Homeowner	Wife and mother of five children. Enjoys handicrafts. Her opinion was considered in her HD. Moved into the house 7 years ago.	The husband is an engineer. He kept detailed records of the house construction process.
7	H3	Homeowner	Wife, mother of four children, teaches physics. Was strongly involved in the HD process. Moved into the house a year ago.	The husband graduated as an architect but did not practice. He has connections with architects.
8	A5	Architect, employed	Young Saudi architect, male. Meets clients and designs projects.	High-standard engineering office that charges medium to high fees. Mainly takes development projects or large size houses. It has a large back-office in Egypt. D2 is the owner of the office.
9	A6	Architect, partner and manager.	Arabian architect, male. Has long experience with Saudi culture.	Low-standard office with the highest production capacity and charges the lowest fees. Financial partner with D2.
10	A7	Architect, employed	Arabian architect, male. Limited experience concerning Saudi culture.	The Saudi owner meets clients at the beginning then progress meetings are appointed to one of the employed architects.
11	H4	Homeowner	The homeowner's daughter. She handled the finishing process of the main house with an Arabian interior designer. Architectural designs were discussed among the family.	The project was a group of family houses, i.e. one main large house and 3 smaller houses for the owner's married sons.
12	A8	Architect	Owner and director of the office. Trained and gained experience at A3	High-standard office that deals mainly with large projects and about 30%

[9] Saudis working in governmental jobs are not allowed to own their own business or have second jobs. This is besides from some professions, such as doctors and architects. They are allowed with specific parameters, e.g. own a business as partners with limited shares.

no.	Code	Occupation	Key characteristics	Notes
			office.	residential projects. They have a new department for interior design projects.
		Interior designers	3 Saudi female interior designers who work in a new section linked to the main architectural office.	
13	A9	Architect	Arabian, male. Director of the office.	Medium to high-standard office.
14	D1	Real-estate developers, general manager	Saudi, male, general manager (GM) of the developing company. 3 years of experience within the company.	The company was established in 2004 with a capital of 68m SR. They developed three projects and had two in progress with a capacity reaching 92 units/project.
		Project manager	Arabian, male. Works alongside the GM.	
15	A9	Architect	Arabian, male. Manager of the architectural section in the office and designs all projects. He has 4 years of experience in the office/SA.	Medium-standard office that charges medium fees.
16	H5	Homeowner, lecturer in interior design.	Saudi, female, married with one child. Recently purchased a house from a developer. Teaches interior design.	Purchased a house from D2's second development project.
17	A10	Interior architect	Saudi, female. Partner and director of the design section. Designs houses' layouts and interior finishes and furnishings.	The company has a branch in Egypt. They provide project designs and can supply material/furniture and workmanship. 60% residential projects where 40% are designed from scratch.
18	G1	Saudi Council of Engineers (SCE), branch manager	Saudi architect, male.	SCE organises the engineering practice.
19	A11	Architect	Arabian, female. Director of the architectural design section.	The owner and general manager is a Saudi female interior designer trained at A2.
		Interior designer	Saudi, female. Director of the interior design section.	
20	G2	Municipality, general manager of East-Dammam branch	Saudi, male. Attends regular meetings at the headquarters where new proposals are announced and developments negotiated. He presents feedback and progress in his area plus quarter-year statistics in these meetings. It is then his responsibility to inform his employees concerning any changes.	Municipality. Deals with building regulations and permission procedures, in addition to many other tasks, e.g. food health and safety and communal spaces such as parks.
21	D2	Developer and architect	Saudi, male. Partner in the real-estate development company and the CEO. An architect who owns architectural offices.	The company was recently established with a capital of 150m SR. It has 2 residential projects under construction, and aims towards completing 300 units/year.
22	H6	Homeowner	Saudi, male. Married with 5 children. Wife is a school teacher. They have selected their HD and it is under construction.	A10 designed their interior finishes and carried out the workmanship.
23	H7	Homeowner	Saudi, male. Married with children. Has a conventional HD layout with an attached apartment, which is in the finishing stages.	Their interior finishes were designed and carried out by A10.
24	A12	Interior designer	Saudi, female. Owner and manager of the office.	The office carries out mainly interior design and workmanship projects. They have just started introducing house-layout design through a new Arabian female architect.

During the process of interviewing and analysis, the researcher noted that professional and background knowledge overlapped within participating members. For instance, a developer who was a homeowner was also an architect and had some academic experience. He represented most characteristics during the interview. Some of the other architects interviewed also reflected on their academic experience, either as relatively recent graduates or as teaching members. Moreover, a number of the homeowners had an architecture-related background. However, the researcher focused on the prime occupation of each interviewee in order to obtain the most of his/her experience in that specific area, while still taking other experiences into consideration.

3. 5 Generalisation of findings

Generalisation of research findings in survey research and studies using probability samples are a relatively straightforward procedure, since they are based on statistical measures. On the other hand, the rule for generalisation of findings in studies adopting non-probability samples can be perceived as unclear, but is similar for all researches using this method, i.e.

> "The rule simply states that one can generalize to cases similar to the one the researcher has studied." (Hood 2007: 162)

In other words, "the findings of qualitative research are to generalize to theory rather than to populations" (Bryman 2008: 391). Hood justifies this process through the following statement:

> "Qualitative researchers describe their samples in so much detail that readers can then decide whether or not to generalize conclusions to similar cases observed by other researchers." (2007: 153)

Therefore, the aim of this research is not towards generalising the found phenomena and design approaches to the general architectural field. They are rather to first accumulate and understand the various categories/concepts constituting the phenomenon of designing privately built houses in SA. This is then followed by the development of a number of outcomes, in which can be adapted for future studies and developments. Whereas, in this research, the outcomes are employed to develop a house design model that aims to assist in enchasing the design of Saudi houses.

Moreover, a substantial amount of hypotheses may be generated from the categories/concepts that have emerged through this study, and present considerable future research opportunities that may aim towards generalisation. This may be attempted either by the researcher herself, or others interested in the field.

3. 6 Data gathering process - THE FIELD STUDY

As mentioned earlier, the field study's main objective was to build a broad understanding of the HD phenomenon in SA, this involved design processes and other influencing factors. Consequently, the field study was structured based on this conception, so architectural offices contexts, residential projects' types, clients' characteristics, design processes, office/architects' objectives and their application methods, and the client-architect/architect-client relationship, all were essential parts of the investigation.

Within these parts, socio-cultural meanings were investigated through highlighting keywords i.e. concepts that indicated socio-cultural variables see (Huong and Soebarto 2003: 371). The generated concepts e.g. convenience of use, comfort, beauty, family routines, social activities, privacy, neighbours relationship, location, safety…etc. are then explained when discussing the field study findings (Chapter 4).

The field study was carried out through two separate visits to SA; the first was in summer 2010. Then as additional gaps were identified through initial analysis and more research questions developed, a second field study followed in the spring of 2011. The Eastern Province region of SA was where the field study took place. It is located on the Arabian Gulf, which provides good access to other neighbouring Gulf countries. This location offers architects in the region with the opportunity to exchange experiences, either through joint projects with other practitioners, or through projects with non-Saudi clients from the neighbouring regions. Consequently, the researcher hypothetically assumed that the enhanced experience of architects in this region would provide the investigation with a wider perspective into the approaches used in architectural design processes in not only Saudi cities but also regionally, which eventually proved to be true.

Data gathered for this research was obtained through four main methods; 1) semi-structured interviews; 2) a focus group; 3) observing the residential context; and 3) the analysis of documents (see 3. 3: Employed data 'gathering' techniques).

The opportunity to gather a wide range of data either through literature or field study was only dismissed when the information could not be related to the subject i.e. when data appeared to be irrelevant. As a result, material and information that was gathered and that could further be gathered and is able to feed into the research's objectives was in some occasions overwhelming as it was difficult to control due to the amount and the diverse nature of the subject. This applies

to many design related studies when associated with a social element, and may even grow in complicity whenever a new variable is added, for example, if a sustainability dimension was added.

However, when it came to the analysis processes afterwards, only data that could be directly related to the unit of study was included, while still appreciating any other secondary information available. This helped the researcher focus on the research questions and reinforced the methodological analysis process that aimed towards generating categories directly related to HD and the associated socio-cultural concepts.

Through the research process, and as the investigation progressed, it became clear that residential architecture is not a profession isolated from the general interest of people i.e. non-professionals in the field. Most if not all individuals related or not related to the architectural field, will have something to share about their house building experience. Whether that experience was produced through their own house construction process or an experience extended to them through someone they knew. This is to say that a decent amount of the knowledge gained about this research area has developed prior to and parallel with the course of the study; i.e. whenever the subject was discussed on professional or social levels or even through local media; it almost was an everyday experience[10].

Nonetheless, targeting specific information during the data gathering process focused the researcher's attention towards the specific elements required for carrying on the investigation and enhanced her general knowledge with verified facts.

3.6.1 Field-study context and consents

The field study started relatively late in the PhD process, which allowed further comprehension of the examined area through literature, in addition to what research methodologies have been

10 The knowledge and awareness about the subject and its context was not purely accumulated through the data gathering stage represented in the field studies alone. Although that was the primary source of data and findings were based on it, general knowledge was gained throughout the extent of the research process. This was accompanied with the researcher's academic background and experience in relation to not only the intellectual parts of architecture in SA, but also Saudi's socio-cultural context. The researcher has gained awareness and experience about the examined subject and its socio-culture through a number of academic studies carried out during her Bachelor and Master's degrees. That was enhanced by the experience gained through 9 years of teaching interior architecture, which involved various projects requiring data that was mainly gathered through field studies.

adapted for similar circumstances. This allowed the researcher to be more aware of what is there and what methods are able to answer this research's questions and support its objectives in a better approach and with less obstacles.

The place where the field study took place i.e. the Eastern region of SA, has been open to the outside world since early years, firstly by being close to Persia and West Asia (India in particular) as trade relations were established. Then in the 1940s the region was exposed to a new Westernised culture through the establishment of the Arabian American Oil Company (ARAMCO), this had "a deep but not immediate effect" on people (Al-Naim 2008: 127). Therefore, architects are expected to be aware of developments in their profession regionally not only nationally, and act upon this knowledge (this is the researcher's hypothesis). On the other hand, the researcher is familiar with the region whereby this will provide her with a better chance to allocate candidates for data gathering purposes within the investigation timeframe since it is her home region and workplace.

An essential procedure that should be undertaken prior to conducting a field study is to obtain consents and ethical approval from related bodies to secure the legitimisation of using the data gathered through the field study within the research.

Field studies in SA require a number of permits from different authorities; this depends also on the type of survey conducted as well. For instance, hardcopies of questionnaires must be reviewed and given a serial number on each copy by local authorities before distributing them to the public. That said; it is evident that this procedure is dismissed in some research practices, as many scholars rely on online survey systems and contact their candidates directly through e-mails despite any regulations, which in many cases scholars are not necessarily aware that they are breaching any regulations.

However, even in occasions where permissions are gained, there remains some cultural constrains towards public surveys, especially if it involved taking photographic images and demographic data. Moreover, it is not common to Saudi people to be approached in a public place or at their homes to carry on any investigation no matter what proof of identification is provided, as this will be faced with suspicion and almost certainly will be rejected. Therefore, previous arrangements and approved appointments are very essential prior to any meeting, and in the case of home visits, it is still more likely to be refused unless the researcher is referred through a well-known person to the homeowner. This attitude towards researchers is a result of

the conservative nature in Saudis social culture, in addition to people's poor experience of empirical research and the needs and benefits that these studies and surveys can bring to them.

That said, for this research all preparations and precaution measures have been taken. It started by a recommendation and reference letter from the researcher's supervisor. This was firstly presented to the sponsor representative in the UK i.e. the Saudi Cultural Bureau in London, who then contacts the main sponsoring body in SA (the University of Dammam) to retain field study permission for a defined period that is determined through a detailed scheduled program presented by the researcher. After nearly four months, permission was gained, this meant that travel expenses will be covered by the sponsor, any additional fieldwork after this, may or may not require another permission, but expenses are no longer covered.

Following initial permissions, ethical approval of the field-study process and the interviewees consent forms was gained through De Montfort University (the researcher's place of study). Then, prior to the actual fieldwork, a local reference letter was also obtained from the researcher's sponsor at the College of Architecture and Planning in University of Dammam within the first week of arrival to SA, this was for presenting to interviewees when requested, it acted as a proof of identity and to support the activity undertaken.

3.6.2 Interviews procedure and strategies

As mentioned earlier under (section 3. 6, p. 104) data gathering went through two main field studies, however, the researcher has gathered a range of data at different stages of the research whenever there was an opportunity, such as during her informal visits to Saudi Arabia and through online communications with related parties. This, along with collective data and materials the researcher has put hand on during earlier studies and through her work as a lecturer.

After gaining all sorts of consents and the preparation of general questions that aim to lead the investigation, the researcher contacted the initial interviewee following the GT sampling method explained under (3. 4 Sampling method) which was then followed by the remaining interviews.

The theoretical sampling method (see section 3.2.3, p.88 and section 3. 4) was followed when selecting the interviewees, which meant that there was not a sample frame or size. Moreover, all interviews were audio recorded, apart from one interviewee who preferred not to be recorded.

Other data materials were also collected during interviews, mainly photographic images, house plans, and a range of documents and forms (see Figure 3.6 Material gathered as data).

3.6.2.1. The first interview

The selection of the first interviewee is vital to the data gathering process as it can influence its progression; hence, it had to be based on many criteria. The main aim of the field study was to understand the HD context in Saudi Arabia and what factors influenced it. According to this, the key person whom to start the interviews with, had to as far as possible– be aware of this field and knowledgeable enough about both the organising structure and the practicing context of architecture in the country alongside the socio-cultural context embracing it.

So, through the researcher's work at the College of Architecture and Planning in King Faisal University (University of Dammam today), along with the support of the literature review, it was apparent that the most appropriate person to start the interviews with was Dr. Mashary Al-Naim. Al-Naim professional work is diversified, he is primarily an academic interested in architectural identity with hundreds of publication including journal articles and books, and he also is a partner in the consultancy architectural engineering office 'Afniah'. Recently, in 2011, he was assigned as Head of the Architectural Heritage Centre in SA. In addition, he has a weekly column in a major national newspaper where he discusses many topics including architecture. Moreover, Al-Naim also has some experience in construction and residential development projects.

Al-Naim's diversified experience in the field, made interviewing him at the beginning of the field work very beneficial, as he was very informative on both the academic and practicing levels. Although the researcher prepared some guide questions, they did not restrict the conversation as the researcher preferred to make her interviewee feel at liberty to expand on the discussion to allow the emergent of as many new variables as possible, which will later on lead to different investigation arenas/questions within the unit of research.

The meeting lasted two hours and the general theme of discussion was about the design process of the different types of houses including clients' characteristics and some of the principles he adopted when designing. Nonetheless, the incorporation of some architectural theories was evident during the discussion. The other topic discussed was related to the application of traditional design concepts in contemporary houses and last but not least, a talk about this research's main interest and how does it relate to the field.

This targeted interview provided the researcher with a good insight into the current architectural practice and residential design in SA. The information, combined with previous knowledge from other resources helped the researcher in planning the following steps of the field study. This was in relation to allocating resources and rearranging the variables that will be investigated in further depth and how to ask about them in order to gather material and information that are valuable to the study. In other words, this initial interview was a useful step in terms of piloting the interview content and process. It provided the researcher with an opportunity to evaluate her skills in interviewing specifically for this subject, nevertheless, interviewing techniques kept on developing further after each interview as the sampled population was not homogeneous in its characteristics, i.e. the interviewed participants were not all from the same professional background and those who were, had different experiences nonetheless.

3.6.2.2. Semi-structured interviews

A semi-structured interview was used in all interviews; Bryman (2008: 196) states that,

> "It [semi-structured interview] typically refers to a context in which the interviewer has a series of questions that are in the general form of an interview schedule but is able to vary the sequence of questions. The questions are frequently somewhat more general in their frame of reference from that typically found in a structured interview schedule. Also, the interviewer usually has some latitude to ask further questions in response to what are seen as significant replies".

This type of interviewing fits well with the research objectives, as the information gathered is more about how interviewees think and what they see as relevant and important, it also offers the interviewer more flexibility in the order of questions and to adjust emphases as new topics emerge, which supports the inductive research process mentioned earlier in this chapter. Additionally, semi-structured interviews offer a more acceptable conversation approach due to its openness and flexibility, which was essential in this research context i.e. a conservative and survey-inexperienced culture, especially in the home contexts where the interviews were conducted with homeowners, mostly the female part.

This said, towards the end of an interview, the researcher reviewed all scheduled guide-questions to assure everything was covered regardless of their order or format. Nonetheless, terminology was kept constant, so was the introductory statement where all interviewees were given the right to withdraw from the process at any time, and were assured that their confidentiality was maintained unless otherwise agreed on.

3.6.2.3. Approaches to interviewing

In order to establish a good relationship with the participants, the researcher utilised a variety of approaches and methods, in response to the backgrounds of the participants, (Birks and Mills 2011: 57). The majority of these interviewing skills were intuitive and emerged spontaneously due to the researcher's familiarity with the context. Nonetheless, her experience was further enhanced by the process. The following points explain some of the approaches and methods meant by this argument, whereas examples of the interview questions and their purposes may be reviewed in Appendix 2:

1. Contacting participants through well-known relatives or friends

Since being interviewed by a stranger can feel intimidating (particularly in a conservative culture like in SA, where gathering data from individuals is not a common or acceptable practice) whenever possible, the researcher approached participants through a friend or relative. When it came to homeowners, however, the researcher still observed a sense of being intimidated, e.g. a participant clearly stating at the beginning of the interview that she would not show the researcher the first floor of their home (where the bedrooms are located), even though the researcher had not requested this.

2. Demonstrating professionalism and encouraging conversational fluency

The researcher attempted to adopt different approaches according to the characteristics of the participants. For instance, when interviewing a professional in his/her workplace (e.g. an architect), she took a more formal approach, showing the list of questions and holding a writing pad to write immediate replies. She then started with questions about the physical attributes of the practice, such as the number of employees and types of projects. This was found to be more appropriate, as professionals expect signs of professionalism, which may be demonstrated initially by these simple yet effective steps, as proven through the discourse of the field study. The simple direct questions about the practice (which participants should find easy to answer) reduced any existing tension at the beginning of an interview and simultaneously provided encouragement for further conversation.

Later in the process, the researcher ceased writing down general answers (the interviews were recorded), with the exception of essential memos or diagrams/sketches. This allowed the researcher to engage in the conversation in a more informal manner, which encouraged further

depth in the discussions, particularly when explaining socio-cultural phenomena, behaviours and users' interaction circumstances.

3. Demonstrating social awareness and friendliness

During the interviews with homeowners, the researcher attempted to make the participant feel that she was an ordinary visitor, rather than a professional researcher attempting to gather personal data. She therefore followed an informal approach from the beginning by not giving much attention to the documents she was carrying and talking first about herself and the work she was undertaking (i.e. as a PhD degree). This made her more approachable and reduced the tension homeowners felt as a natural reaction towards a stranger asking personal questions about their homes. In addition, the presentation of the consent form reassured participants about their confidentiality and rights.

4. An in-between approach

The position with residential developers was similar to that with other participants. The main point was that they were cautious about releasing any information that might affect their business, or that could assist their competitors. One indeed stated as much.

The overall interview approach used with developers was a combination of those used with professionals and homeowners. The researcher aimed to establish a balance between demonstrating her professionalism, and at the same time being social and friendly. One of the main techniques in these interviews was the use of everyday terminology.

3.6.2.4. General interview remarks

1. An important point from interviews with homeowners was the inability to interview homeowners as couples, as a result of socio-cultural barriers. The researcher made a number of direct attempts to ask to meet both homeowners (as a couple) at the same time, but both demonstrated unwillingness, even though there had been an initial acceptance to being interviewed before this scenario was suggested. As a result, the researcher avoided this suggestion during subsequent requests, in order to prevent further obstructions to the data gathering process, particularly given the fact that the recruitment of volunteers was not easy.

2. However, the fact that the majority of the homeowners' interviews were with the women in the household did not affect the findings. Studies have demonstrated that women have a better understanding of their home environment and are more involved in decision making (Lee and

Park 2011b; Al-Nafea 2006). This was confirmed through the data gathering process and findings, as demonstrated in subsequent chapters.

3. At the end of the interviews, the researcher ensured that the participants were happy with the process and the discussion. They generally stated that they did not experience time passing, even though interviews lasted for approximately an hour on average.

4. As soon as was possible after an interview, the researcher noted down a brief report that highlighted the main finding/s and any new concepts or phenomena that might have emerged through the discussion. She then occasionally compared the participants' feedback and wrote a memo describing any common features or contrasts, in order to investigate it further during the following interviews. The memos also highlighted any issues faced by the data gathering process, e.g. communication issues such as arranging a suitable meeting time, or issues related to the questions asked and their adequateness to the research or participants.

3.6.3 Memos during the field study

The process of using memos in this research took many forms. It began with early knowledge building about the subject, mostly in the form of questions and relationship diagrams. Later, when the empirical data gathering had begun, memos were taken during, and immediately after, each interview, in the form of short notes or diagrams. An example of memos taken between interviews is shown in Figure 3.4.

At this early stage, the memos were brief: firstly, this was due to the nature of the interview settings, (i.e. the researcher prioritised spending the time focussing on what is being said, in case information needed further elaboration or clarification through follow up questions) plus the limited time of, and between, interviews (further details can be found under section 3. 6). Secondly, this was due to the limited depth and volume of data in the initial stages, which made it difficult to establish elaborative memos that able to explain relations or processes.

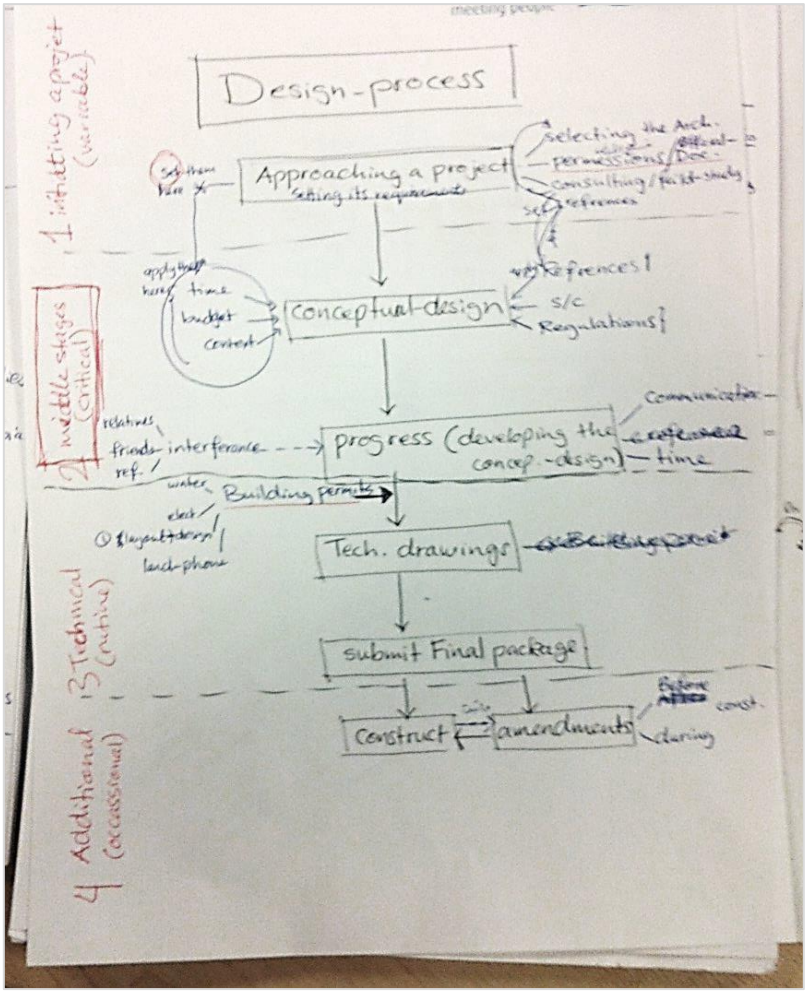


Figure 3.4 An example of a diagram developed during the data gathering process

As data gathering and analysis advanced, there were more elaborative memos documented during the transcription of interviews and afterwards during data analysis i.e. the coding process. These explained phenomena, raised questions or hypothesis, and suggested possible relationships between emerging concepts. The *system* (see Birks and Mills (2011: 44), and p. 88 in this chapter) used for documenting detailed written memos was mainly in the form of endnotes under the data analysis tables (Figure 3.5). This made accessing and transferring memos between soft copies of files practical. More significantly, it ensured that memos remained linked to the original sources, during cross-referencing, i.e. to identify when, where and why a memo was constructed.

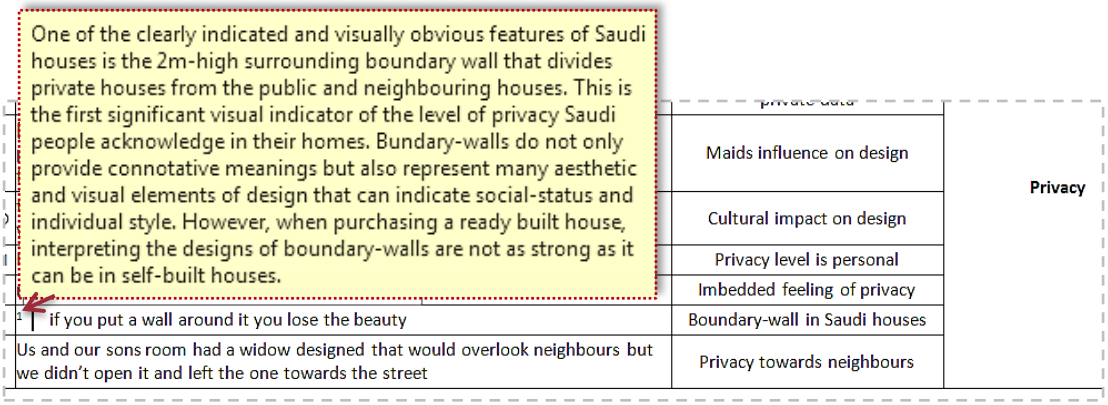


Figure 3.5 Organising memos as endnotes during data analysis

3. 7 Grounded Theory data analysis method

The main objective of the field study was to develop an understanding of HD in SA, i.e. the forms and processes involved, along with the socio-cultural concepts and the legislations affecting and influencing the process and its outcomes. Although this research acknowledges the role of other factors in the production of residential buildings (i.e. economic and environmental factors), they were not exploited as a core subject of this research. This was in order to maintain focus on, and control of, the main area of emphasis.

The data gathered during the extent of the research, and in particular during the field study, included a number of different materials (Figure 3.6). Although all information obtained through the investigation influenced its progress, not all data was cited within this thesis, since some data had marginal relevance to the issues discussed, or were only used to synch/link information that is more essential, or to lead to more specified data. The most valuable and rich data was obtained through interviews. Interview manuscripts (including other supportive documents and images) were analysed using GTM for analysing qualitative data as described below. Figure 3.7 provides a brief summary of the data analysis process.

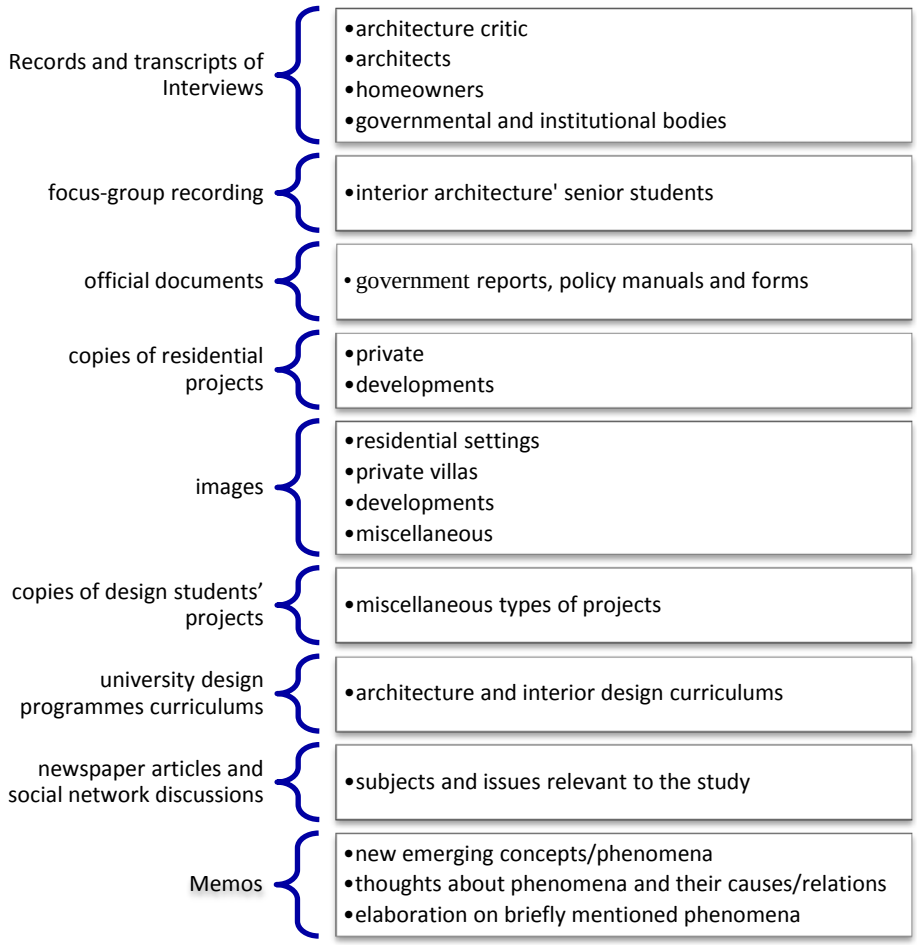


Figure 3.6 Material gathered as data

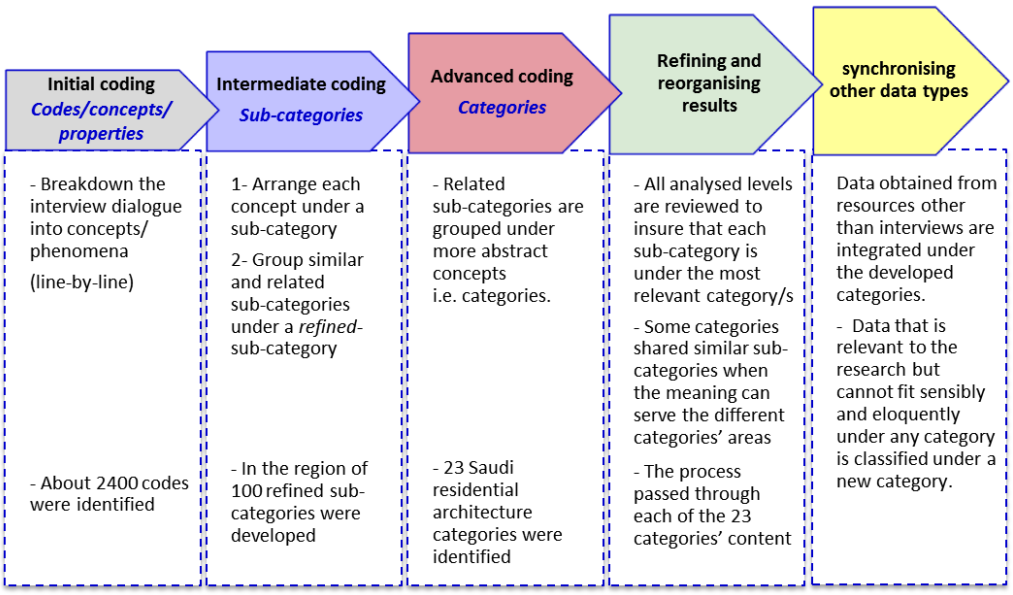


Figure 3.7 Data analysis process (developed by the researcher)

3.7.1 Initial/open coding: identifying phenomena and concepts

The analysis process began with **initial/open coding** where concepts and phenomena were identified from the interview manuscripts by breaking down the dialogues line-by-line, as suggested in GTR literature (Glaser 1978: 57; Birks and Mills 2011: 96). Figure 3.8 illustrates the researcher's application of this stage.

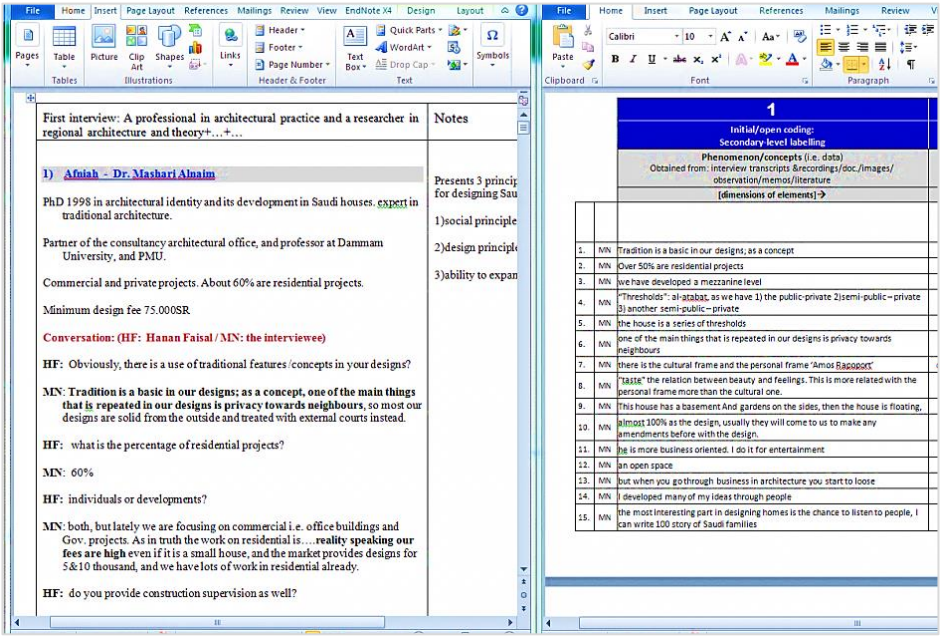


Figure 3.8 Transferring concepts and phenomena from manuscripts (line-by-line) to MS-Word tables

As a result, **2400 concepts and phenomena** referring to the design of Saudi residential buildings were identified (including recurring concepts).

A notable feature in this initial coding process is the importance of thinking objectively away from a subjective experience within the examined field, in order to ensure that concepts are not built on any presumptions that may not be precise. This can be a challenging task, requiring constant questioning and reviewing of findings (codes/concepts), so that only justifiable findings are reported. This stage was by no means isolated from the intermediate stage; it was an interwoven process, as explained below.

3.7.2 Intermediate coding: categorising and labelling concepts

Identified concepts are then compared and reconnected in "new ways" (Strauss and Corbin 1990: 96) through the 'intermediate coding' stage. This 'focused' coding, which according to

Charmaz "requires decisions about which initial codes make the most analytical sense to categorize your data incisively and completely" (2006: 57-58) went through repetitive reviewing and constant alternation between initial coding, intermediate coding and the recorded memos. This also involved testing a variety of approaches to implement the analysis process, as shown in Figure 3.9. MS-Word tables were established as the best method reached for implementing and documenting the process (see Figure 3.10).

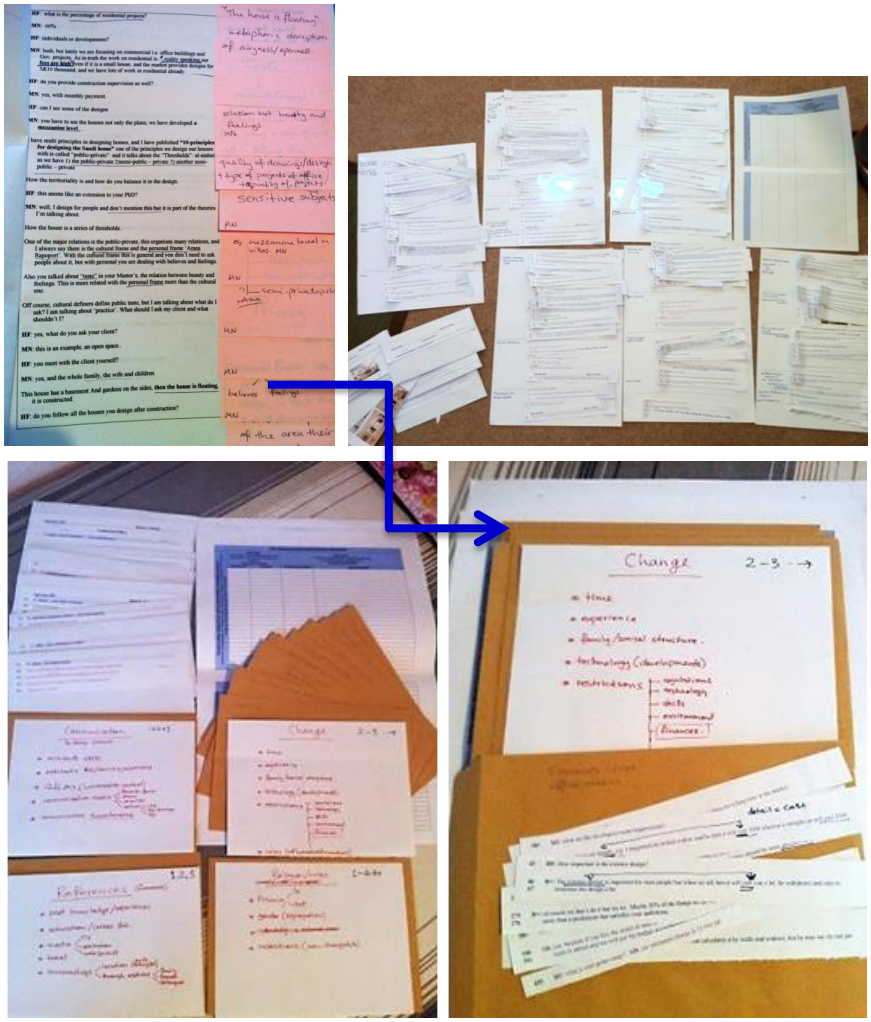
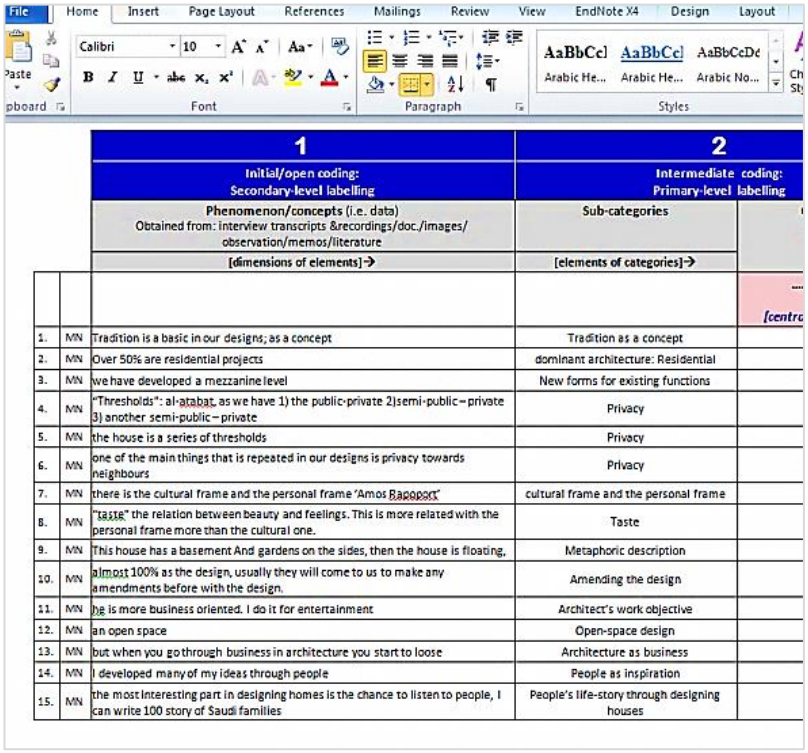


Figure 3.9 Techniques used in early initial/intermediate coding stages



		1	2	
		Initial/open coding: Secondary-level labelling	Intermediate coding: Primary-level labelling	
		Phenomenon/concepts (i.e. data) Obtained from: interview transcripts &recordings/doc./images/ observation/memos/literature	Sub-categories	
		[dimensions of elements]→	[elements of categories]→	
1.	MN	Tradition is a basic in our designs; as a concept	Tradition as a concept	
2.	MN	Over 50% are residential projects	dominant architecture: Residential	
3.	MN	we have developed a mezzanine level	New forms for existing functions	
4.	MN	"Thresholds": al-atabat as we have 1) the public-private 2)semi-public – private 3) another semi-public – private	Privacy	
5.	MN	the house is a series of thresholds	Privacy	
6.	MN	one of the main things that is repeated in our designs is privacy towards neighbours	Privacy	
7.	MN	there is the cultural frame and the personal frame 'Amos Rapoport'	cultural frame and the personal frame	
8.	MN	"taste" the relation between beauty and feelings. This is more related with the personal frame more than the cultural one.	Taste	
9.	MN	This house has a basement And gardens on the sides, then the house is floating,	Metaphoric description	
10.	MN	almost 100% as the design, usually they will come to us to make any amendments before with the design.	Amending the design	
11.	MN	he is more business oriented. I do it for entertainment	Architect's work objective	
12.	MN	an open space	Open-space design	
13.	MN	but when you go through business in architecture you start to loose	Architecture as business	
14.	MN	I developed many of my ideas through people	People as inspiration	
15.	MN	the most interesting part in designing homes is the chance to listen to people, I can write 100 story of Saudi families	People's life-story through designing houses	

Figure 3.10 Organising and documenting the analysis process and results using MS-Word tables

Since many meanings were metaphoric or contextual, the use of dedicated software for qualitative research analysis such as 'NVivo' was neither practical nor beneficial to the process. MS-Word had many advantages, i.e. the ability to search and highlight certain words; to sort any required groups by their numbers or alphabetically; and link notes with certain sentences in the form of footnotes, which is practical when transferring text between similar (Microsoft) files/documents. There is also the advantage of accessibility, as most computers have MS-Word installed, particularly within the university campus. All these features were essential and practical for the analysis process and were found to be beneficial.

Intermediate coding was carried out until saturation was reached and all data was analysed. This activity resulted with approximately **100 refined sub-categories** (after grouping the repeated ones). Sub-categories are created from "conceptual reoccurrences and similarities in the patterns" (Birks and Mills 2011: 93). Figure 3.11 shows an example of this process and Figure 3.12 demonstrates an example of some final results.

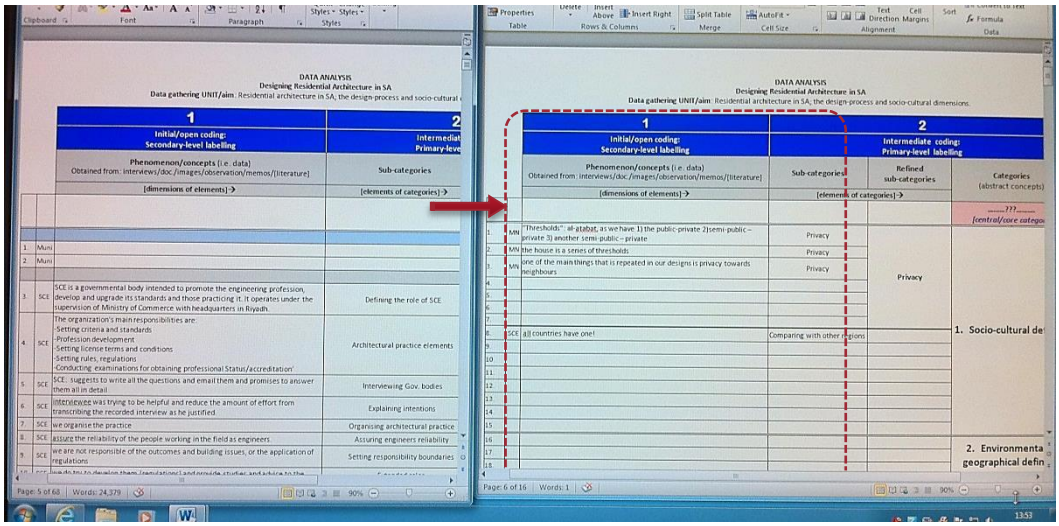


Figure 3.11 The process of grouping related sub-categories under higher conceptualised categories

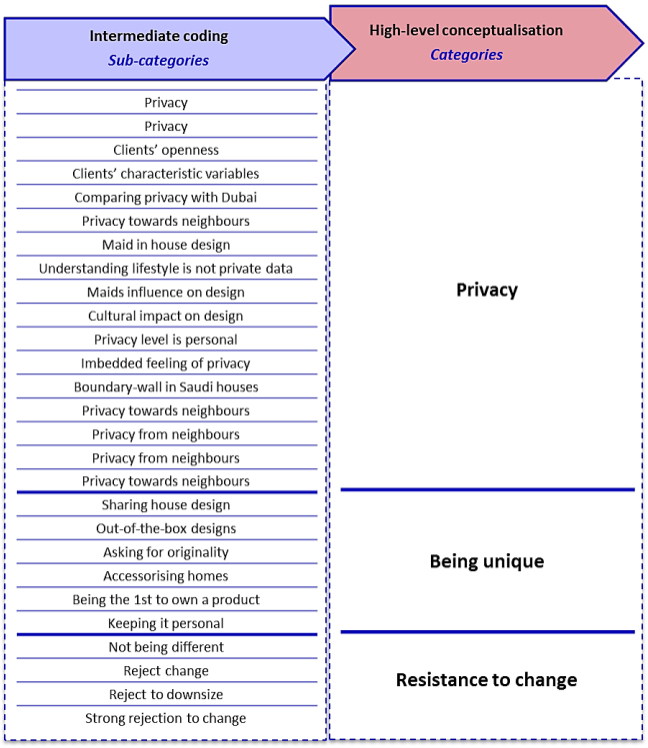


Figure 3.12 Example of intermediate coding (categorising) results: elevating the level of conceptuality

It is notable that the number of sub-categories under any main category does not reflect their frequency of occurrence or contextual value: some may have few elements (i.e. concepts) to describe them, but are nonetheless vital to the subject. An example of this can be found under the category 'resistance to change' shown in Figure 3.12. This is a common phenomenon in

social science (Val and Fuentes 2003), whatever the subject being investigated. This category is explained further in Chapter 4 (section (T1) 1.7).

After reviewing and further concentrating the results, **twenty-three categories** describing the concepts and phenomena of SA residential architecture design were identified (Figure 3.13).

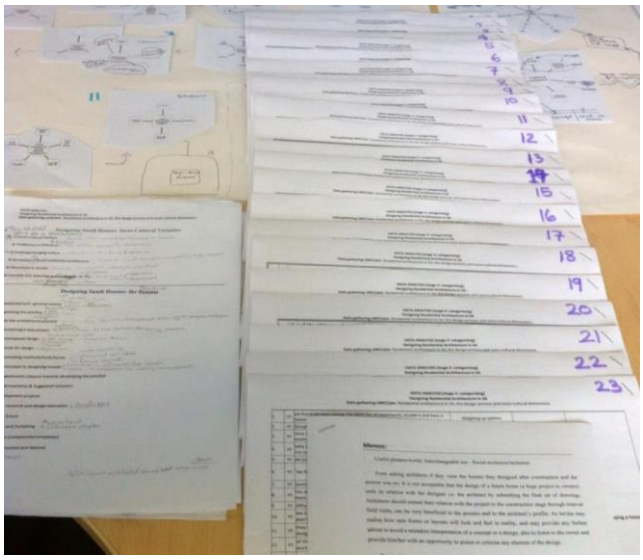


Figure 3.13 Analysis findings: 23 categories explaining the examined phenomenon

3.7.3 Theming the findings

The researcher classified the findings in order to ensure they were comprehensible and easy to manage. These were placed into categories of Saudi residential architecture design under two themes: one focussing on socio-cultural concepts, and the other on concepts that are more empirical in nature. Six categories from the twenty-three were grouped as supporting categories, since they had a secondary impact on the main unit of study (further details on this classification process will be outlined in Chapter 4).

This process represents the stage in GTR where a *core category* is being identified (see p. 89). A core category is "the central phenomenon around which all the other categories are integrated" (Strauss and Corbin 1990:116). It was preferable to divide the findings into more than one core category, as the subjects under discussion focus on more than one main core (i.e. **socio-cultural concepts and phenomenon** in residential architecture, and the **empirical properties in residential design processes)**. Grouping all phenomena under one large core category would have made it complex to explain, and consequently difficult to follow.

Nevertheless, the themes and their concepts are integrated as a whole when creating the final research outcomes (Chapter 5).

Theming was carried out in a similar manner to the process used in categorising. However, here the researcher used pieces of paper, each containing a category and its sub-categories, which were then linked to each other on two A2 sheets of paper, i.e. a sheet for each theme (see Figure 3.14). Categories were arranged based on their level of importance and influence on residential design and also their relationship to each other.

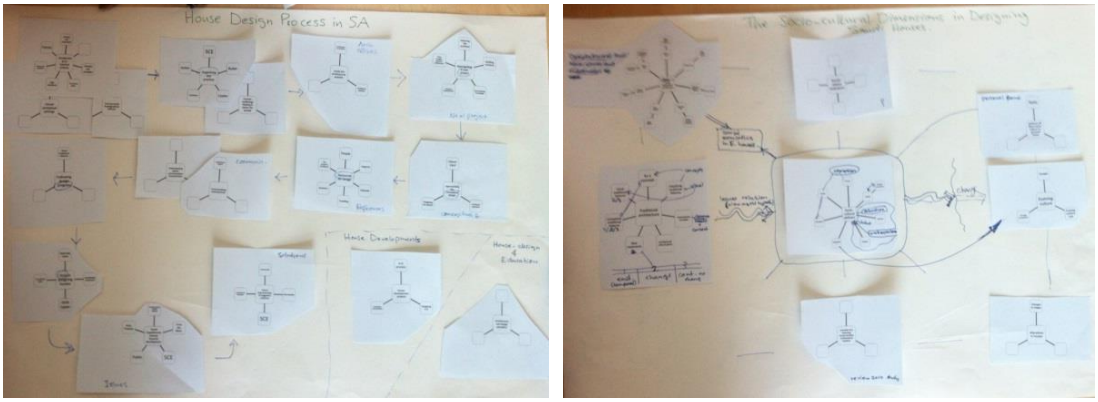


Figure 3.14 Theming: linking and organising categories

3.7.4 Synchronising remaining data

Alongside the interviews (Figure 3.6), further resources of data were essential for this research's investigation. Materialistic data, in the form of images, drawings, official documents and brochures, were synchronised in the analysis processes and findings. These acted as: 1) evidence to support the data obtained through interviews; and/or 2) a lead to further investigation. Personal **observation,** on the other hand, played a significant role in linking the information and enhancing the researcher's ability to understand, explain and interpret findings. The majority of observations were documented in the form of memos.

3.7.5 Data analysis process summary

There was a continuous comparison and questioning of outcomes, held parallel to the analysis process, to ensure the rationality of the labels produced and justify the criteria into which they were grouped.

Identifying phenomena and concepts within data was not a straightforward process. It required a professional approach, with an ability to not only highlight certain words, phrases or forms, but

also look deeply into the connotative meanings and any metaphoric meanings imbedded within statements. This then required focused analytic thinking in order to link the findings and explain the relations and meanings within, and between, concepts in a rational manner throughout an interwoven process (Figure 3.15).

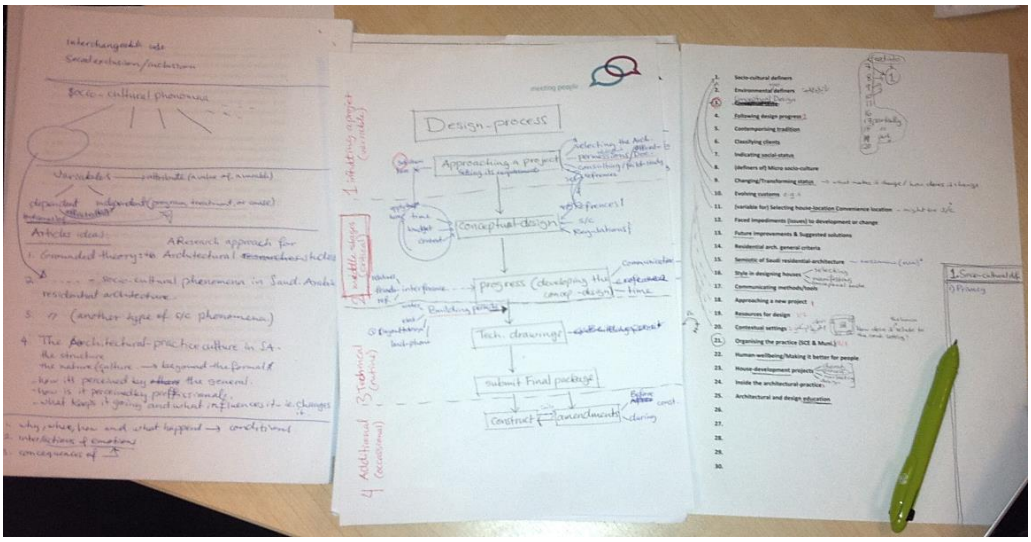


Figure 3.15 Interwoven complex analysis process

Based on the analysis process (Figure 3.7), the researcher developed a table in order to document this process. The table went through a number of alterations in response to the emerging requirements of the analysis process, including technical or analysis requirements. Figure 3.16 shows the final design and structure of the table, which may be adapted for other GTR analysis processes.

		1	2			3
		Initial/open coding	Intermediate coding			Core/central category
		Phenomenon/concepts (i.e. data)	Sub-categories	Refined sub-categories	Categories (abstract concepts)	Themes
		[dimensions of elements]→	[elements of categories]→			
1.						Theme 1 Socio-cultural Categories in SA Residential Architecture
2.						
3.						
4.						
5.						
6.						
7.						
8.						Theme 2 Empirical Categories in Saudi HD
9.						
10.						
11.						
12.						
13.						
14.						

Figure 3.16 GTR data analysis table (developed by the researcher)

3. 8 Demonstration of research findings and outcomes

The findings refer to the set of categories and their properties that explain the examined phenomenon. They have emerged through both the investigation and the data analysis process. The researcher organised and explained these findings in Chapter 4. Whereas the research outcomes (Chapter 5) refer to:

1. The generated structure showing the categories and concepts constituting Saudi residential architecture design (section 5. 2);
2. The conceptual model explaining the relationships between the categories constituting the phenomenon of designing privately built houses in SA (section 5. 3);
3. The substantive theoretical explanation of the phenomenon, which is based on the conceptual model (sections 5. 4).

Each of these outcomes, developing processes, function and presentation methods are explained in further details in Chapter 5.

3. 9 Theoretical discussion and the validation of outcomes

3.9.1 Discussion

In Chapter 6, the researcher discusses and validates the research outcomes in oppose to the relevant theories. Birks and Mills (2011: 125) describe this activity as a means to "augment, support and validate existing theories and in so doing explain and reinforce the value of your own contribution".

Theories derived mainly from the discipline of architecture are used, alongside complimentary disciplines during the theoretical discussion. Birks and Mills explain this act through the following statement:

> "We strongly encourage the use of theoretical frameworks derived from your own discipline where these prove relevant in explaining your grounded theory and discussing the contribution it makes to knowledge in your professional area. In reality these are the theoretical constructs with which you are most familiar". (Birks and Mills 2011: 125)

Nevertheless, they do advise researchers to remain open minded towards further sources of theoretical codes in order to expand their knowledge. However, they also suggest using "what is available to you as long as it 'fits'" (Birks and Mills 2011: 125).

In this research, the researcher puts forward her developed theory concerning Saudi HD with manly the architectural theory developed by Christopher Alexander in his two books *The Timeless Way of Building* (Alexander 1979) and *A Pattern Language* (Alexander et al. 1977). These books are considered two parts of a single work; the first "provides the theory and instructions for the use of the language" presented in the second book. In turn, the pattern language with its practical details of building is considered the "sourcebook of the timeless way" (Alexander et al. 1977: ix). Nonetheless, other relevant theories are incorporated in the discussion as explained in Chapter 6.

3.9.2 Validation

In order to address the credibility of the research process and the data analysis findings, the researcher referred to the methods suggested in GT literature. The validation process referred mainly to the article on *Determining Validity in Qualitative Inquiry* (Creswell and Miler 2009). The authors argue that, in contrast to quantitative studies:

> "Qualitative researchers use a lens not based on scores, instruments, or research designs, but a lens established using the views of people who conduct, participate in, or read and review a study." (Creswell and Miller 2000: 125).

By 'lens' it is meant that the researcher uses a viewpoint for reaching validity (Creswell and Miller 2000: 125). Three lenses are suggested: (1) the lens of the researcher; (2) those of the participants in the study; (3) credibility given by individuals external to the study.

Nine validating procedures commonly used in qualitative research are discussed in the article. These are: (1) triangulation; (2) disconfirming evidence; (3) researcher reflexivity; (4) member checking; (5) prolonged engagement in the field; (6) collaboration; (7) external audits; (8) thick-rich description; and (9) peer review. One or more of these procedures should be used for validation (Creswell and Miller 2000: 124).

In this study, validation has been established through the lens of the researcher and that of the external individuals. This has been achieved through adhering to the following procedures:

1. **Triangulation**: the researcher utilises this method to search for relationships between data from multiple methods in order to establish common themes or categories, in this case interviews, observations, and documents. As Creswell and Miller state: "The narrative account is valid because researchers go through this process and rely on multiple forms of evidence

rather than a single incident or data point in the study." (Creswell and Miller 2000: 127). Comparing outcomes with existing theories support the triangulation process in advanced stages of the research, i.e. when discussing the outcomes, which provides further validity (Glaser and Strauss 2008: 118).

2. **Researcher reflexivity**: researchers "report on personal beliefs, values, and biases that may shape their inquiry…early in the research process to allow readers to understand their positions" (Creswell and Miller 2000: 127). In this study, the researcher provides specific information in the introduction chapter, outlining her background knowledge, cultural background, and the motivation for her research.

3. **Prolonged engagement in the field**: Creswell and Miller (2009: 128) state that if the researcher stays at the research site for a prolonged period of time this "solidifies evidence because researchers can check out the data and their hunches and compare interview data with observational data". Additionally, the longer the researcher stays in the field "the better the understanding of the context of participant views." (2009: 128). This researcher not only spent a long period in the field, but also lived in the location and is familiar with the social and cultural context examined. The researcher had also gained awareness and understanding in the field of architectural design, through her years of related training and practice.

4. **Thick-rich description**: this "is to describe the setting, the participants, and the themes of a qualitative study in rich detail." (Creswell and Miller 2000: 128). This has been clearly implemented as part of the research process. In this case:

> "Credibility is established through the lens of readers who read a narrative account and are transported into a setting or situation…also enables readers to make decisions about the applicability of the findings to other settings or similar contexts." (Creswell and Miller 2000: 129).

3. 10 Developing the SHDM

In this research, the outcomes are employed for the development of a house design model, which is precisely designed for application in the Saudi context. The model's form and constituents are based on the research objectives, findings and the outcomes. This empirical employment of the research findings and outcomes supports the validation of what has been produced and presented through this study, this, along with its primary benefit, i.e. offering a

design method that can assist in enhancing the design of privately built houses in SA. Detailed explanation on the model's design process is presented in Chapter 6.

3. 11 Chapter summary

This chapter has given a detailed explanation of the research methodology followed, and the methods and the processes whereby they were applied. Through explaining the details of the processes, the reader does not only comprehend the methodology itself but also a full understanding of the purposes of the research, its means of delivery and the outcomes generated.

The data gathering and analysis sections are an important part of this research, as they introduce a relatively new and developed approach towards examining architecture and design related subjects/phenomena. This notion is extended in the type of outcomes presented and the process through which they were developed. A number of research methods frameworks have been demonstrated in this chapter, which have the potential to be adapted for other similar studies.

At this stage, the research structure, settings and the process applied in order to achieve its objectives have been identified and clarified. The following sections present the research findings, outcomes, discussion and development, which together form the researcher's contribution to the examined field.

Chapter 4
Research Findings:
The Concepts and Phenomena Constituting Residential Architecture in SA

4. 1 Introduction

Following consideration of all the different data resources proposed (Figure 3.6), the GT data analysis process (section 3. 7) was applied to result in the generation of 23 categories (Figure 4.1) demonstrating in excess of 60 abstract concepts in the phenomenon of Saudi Arabia's residential architecture design. In this chapter, a thorough explanation of the categories is presented by dividing them into two larger themes in addition to a supporting group of categories (see Figure 5.1).

The themes signified the two major components of the phenomenon under investigation: T1) Saudi Arabia's (SA) socio-culture in house design (six categories); T2) empirical categories in SA's residential architecture design (11 categories) (see section 5. 2, Figure 5.2, and Figure 5.3). These themes are then followed by what is classified here as 'supporting categories' (six categories). These categories have arisen through the investigation but only have secondary influence on privately designed houses. Supporting categories were necessary for the investigation process as they were used to link, compare, or define certain elements and properties related to HD. However, only a brief description of these categories has been presented in this research to maintain the focus on the *unit of study* (see section 3. 2), i.e. HD in SA, and the incorporated socio-cultural concepts and phenomena.

Each category (i.e. research finding) is first described and explained, and then followed by the evidence that led to its generation (interview quotations and figures from the gathered data). This method of presentation was selected because integrating the large number of quotations in-line with the explanatory text, would have produced an overly complex, incoherent and difficult to articulate set of ideas.

At the end of the chapter, a brief summary of the findings is presented. Whereas, in the following chapter (Chapter 5) all the concepts generated are integrated and arranged to deliver the research outcomes.

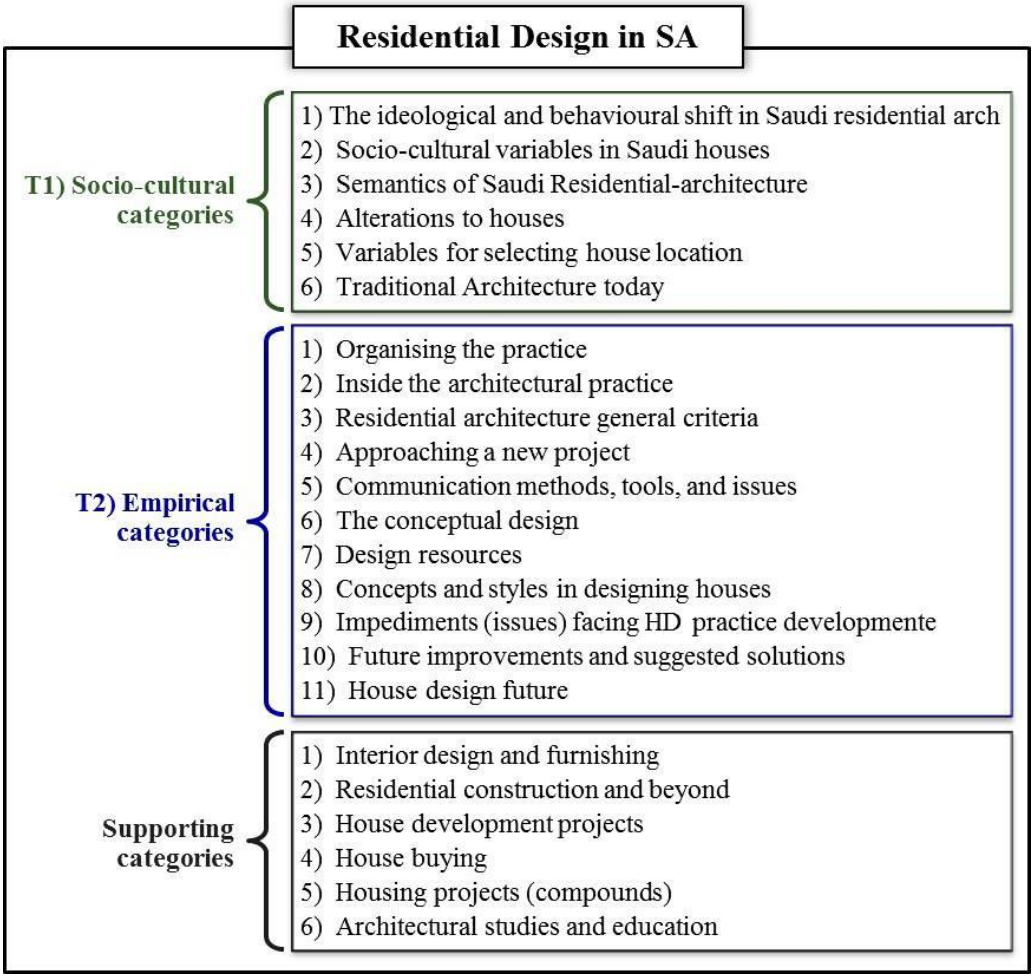


Figure 4.1 Categories of the Saudi residential architecture

4. 2 Categories of residential architecture in SA

Theme 1 Socio-Cultural Categories in SA Residential Architecture

Category is a term used to describe the properties found in the phenomena under study. This first section discusses the research findings, in particular the socio-cultural categories in Saudi Arabia's residential architecture, the researcher demonstrates the semantics of today's homes and the changes that have emerged accordingly. This applies in combination with those factors that have influenced these changes based on the data gathered. People's perceptions of the architectural profession is also mentioned, as is resistance to change and the reasons for it. This section is then followed by exploration of the empirical theme, which will discuss the more practical and physical dimensions of Saudi HD. The categories discussed within this theme are:

(T1) 1 The ideological and behavioural shift in Saudi residential architecture;

(T1) 2 Socio-cultural phenomena in Saudi houses;

(T1) 3 Semantics of Saudi residential-architecture;

(T1) 4 Alterations to houses;

(T1) 5 Variables for selecting house-location; and

(T1) 6 Traditional architecture today.

(T1) 1. The ideological and behavioural shift in Saudi residential architecture

The term 'ideological' is used here according to the Oxford Dictionary definition, it is "a system of ideas and ideals [and] the set of beliefs characteristic of a social group or individual" (Oxford-Dictionaries n.d.). Over the past fifty years, socio-cultural phenomena in Saudi residential contexts have reformed, developed and evolved. Changes have occurred because of transformations in expectations regarding the form and shape of architecture and vice versa. Many authors (review Chapter 2: 2. 13) and participants in this investigation have supported this notion; Al-Naim stated that:

> "Changes are abnormally rapid…there is a shift in thinking within the Saudi society". A1

> "Now they [old layouts] changed, not only us, all people changed their thinking". H2

The ideological and behavioural changes identified during the investigation are arranged under the following headings:

1. Ideological changes in socio-cultural concepts related to residential architecture;
2. Travelling and living abroad
3. Comparing with other regions;
4. Female involvement;
5. Changes to approaches to housekeeping;
6. Attitudes towards the architectural profession; and
7. Resistance to change.

(T1) 1.1 Ideological changes in socio-cultural concepts related to residential architecture

A number of concepts identified through the analytical process pointed to, and confirmed changes in people's thinking and perceptions of residential architecture. These changes were triggered and influenced by many phenomena of modern life. Consequently, changing ideologies had an impact on how people reacted to their homes and lifestyles.

> "Although it was only a short time that I worked in SA [4 years], I noticed a new direction toward openness, which may increase in the future. There was a change in the way of thinking". A9

Although physical changes can be easily recognised by some, e.g. changes to the form of houses, from adobe courtyard buildings to the villa form, ideological changes are more difficult to identify. Even when they are recognised, some people find it difficult to acknowledge change, especially in SA, where the socio-cultural setting comprises a significant portion of people's personality/identity.

Three concepts reflecting socio-cultural ideological change, as related to Saudi residential architecture, were identified, these provided examples of ideological changes but are not suggested to be the only ones:

1. A house-for-life;
2. To build or to buy; and
3. Prioritising the family zone/s.

1. A house-for-life

The concept that a house is 'a house for life' was deeply held in relation to home ownership, and in many cases still is:

> "I will buy something as long as it is good quality even if it costs more…I had in mind that it is 'for life', that is why we did not finish the entire house". H3

Houses were intended for extended families; i.e. after living for a while at one's parents' home, a son and his wife with their young children move out to a new house. The parents may even move with them, especially if he is the oldest son or the last to have shared their house with them. After this the scenario then repeats itself.

However, this practice has changed for most Saudi families. Newly married couples often take on their own accommodation, the majority rent an apartment for a while, unless their parents can provide a separate apartment for them within their own home (explained further in section (T1) 3.6, point 3Annex apartment).

As real-estate prices have escalated during the past few years, houses have become unaffordable for many people. Consequently, the notion of a 'house for life' is not ideal any longer.

> "My brother in-law is an ARAMCO employee, he wanted a 1000 m^2 plot, and then went down to 800 then 500. And now he wants anything and he cannot afford it". D1

Therefore, the concept of buying a smaller house/apartment to serve current needs, instead of wasting money on rent, then moving to a bigger house when finances allow, and as the family grows, is emerging and spreading rapidly.

> "When I was discussing a house design with a client, he said I do not care about the future, this is not my house for life. It is only for some years then I will move to a larger house". A9

> "We really do not want a large house, my parents have one and they lived in it 10 years full, but now it is empty and hard to manage". H5

Nonetheless, many people still find it difficult to accept this idea, and feel a kind of shame about moving into a smaller house than is considered the standard norm.

> "He [house seeker] says, it is a house for life, I want a large plot and five bedrooms…etc., so he refuses to buy. He says I will not compromise...he only has one child so he is paying today for something he does not really need". D1

2. To build or to buy

For many years, the norm in SA has been to buy a piece of land and build on it. Non-profit governmental loans through the REDF (Real Estate Development Fund) supported this phenomenon (see Section 2. 16). However, due to the huge inflation in real-estate prices in 2008 (Savard et al. 2010), this has become an unrealistic choice for many middle class people and the situation changed. This was in some ways a financial setback; however, development projects started emerging and spreading fast. These offer people a ready built home, taking the pressure of building from nothing off those people who did not have the time or willingness to engage in that type of venture.

Nevertheless, with rocketing prices, developments are offering new forms of affordable dwelling, providing an alternative to people who want to own a home but cannot afford it, in the form of apartments, semi-detached houses, and houses built on divided land[11] (i.e. with small plots) (see (T2) 3.1: The plot, p.196).

Formerly, the concept of living in an apartment was not acceptable to many; however, in recent years, apartments have become the initial choice for private living, being particular popular with renters[12].

> "Everything changes, before no one wanted apartments and now they fight for one". D2

A dilemma about buying a house, i.e. not building one, still exists for many. Numerous factors fuel this phenomenon, one is the desire to have a custom designed house, and another, the poor quality combined with exaggerated prices that most developments offer. Moreover, there is a conceptual socio-cultural understanding associated with the act of buying a ready built house, as this used to be done rarely in select circumstances. That said, buying a ready built property, or preferably, an unfinished one, i.e. so that the owner can participate partially in the design/finish of the build, is becoming common, in fact, it may be more common than privately built houses. It should be stressed that this only is a hypothesis, many people may not support it, although many of the participants interviewed perceived it to be the future of home ownership.

3. Prioritising the family zone/s

A number of the architects interviewed noted that the family zone/s in HD is garnering increasing interest. Moreover, the involvement of family members in the design process reflects this interest.

> "It usually starts with the homeowner and ends with the whole family at the office". A2

[11] The smallest plot of land is 400 m^2. New regulations allow for the division of a plot, as long as the width on the street for each divided part is not less than 12 m. However, in the Eastern Province, the owner is required to finish the majority of the build, i.e. finishes are not necessary, before being granted approval for dividing the real estate. Therefore, developers, unlike individuals, can afford this. Whereas, if an individual requires a smaller plot/house, he must buy a built property from a developer.

[12] Full ownership of apartments was not regulated in SA until 2007.

> "We put down the drawing sketches, then the children and I sit and say we want this and this". H2

Although guest zones still retain a high status in a design, family spaces are of equal demand in terms of location, size, design features and even functions. For instance, cinema rooms e.g. H3, and playrooms e.g. H4, are specially added as distinct family designated spaces.

What used to be a single living space at the back or middle of a house, i.e. the middle access point between remaining areas, is now selected with greater consideration and mindfulness, with a view to producing a final build with an open airy atmosphere.

> "Residential buildings have changed from the past in the way people perceive them; in the past they used to demand large spaces; i.e. a men's reception, and women's reception, etc., but now their focus is on family not guests. People have started to think that they will be the ones to enjoy the house, the living area, the open kitchen and the bedrooms. Nevertheless receptions remain important but focus has increased on the family section". A2

(T1) 1.2 Travelling and living abroad

Exploring and interacting with other cultures through travelling or working abroad has influenced ideological changes in Saudi's socio-cultural understanding, as related to the residential context. Although this was initiated in the seventies, it is now more intensive, as travelling for whatever reason, has become more common.

Changes have occurred in the way residential architecture is perceived in terms of form, styles, size, spaces/functions and materials. This is not only a physical change, but also one involving semantics, i.e. socio-cultural meanings.

> "People are more aware [about house designs] through travel. The images they bring with them show this…People who have witnessed and lived abroad do not want exotic forms and excessive designs, they want a *simple* house and say it is better to *spend what I have on things inside* the house instead of the exterior". A2

> "This house in another country could shelter a whole family; I do not know why it does not do so here". H5

(T1) 1.3 Comparing with other regions

The ability to compare and review what we have with availability in other regions - especially those nearby - has increased through access to varying forms of media, television and the

internet, and above all through travel. This exists not only in terms of architecture, but also on all other fields, e.g. politics and education. However, our interest here is on comparing its relationship with architectural, residential architecture in particular.

People look for better choices and finer outcomes. In other words, they seek to measure up to a higher regional standard. Some look for a sense of assurance, i.e. to be sure that what they have or what they have selected (for their HD) is better or similar to what else is available.

A rapidly developing city in the Arabian Gulf region, Dubai, offers inspiration to both architects and homeowners.

> "Here, in comparison with Dubai segregation is still important". A2

> "I view projects that are constructed in nearby regions, like Dubai". A2

> "Look at Jumaira[13] in Dubai, they have very nice designs". G2

(T1) 1.4 Female involvement

The change in the status of females is having a huge influence on how new houses are designed (See Lee and Park (2011)). Although some women do not become involved in such activities, many have a strong representation in residential designs. Those who stay in the background often still guide and control the design through their husband, as he transfers her demands to the architect (as argued by Al-Nafea (2006)).

> "In some of the projects it is clear that there are revisions and requirements set by the wife". A2

> "No woman comes without their husband". A9

> "Some men take the plans to their wives at home to consult them. Then he cannot explain what she wants to us, this really exhausts us". A6

The female does not attend discussions with the architect, mainly to maintain conservativeness, as architectural offices are perceived as male only environments. However, to overcome this obstacle, some explanations and discussions may occur using telephone calls, etc.

[13] A contemporary neighbourhood in Dubai with many tourism attractions.

> "My husband and I worked on the design, I spoke to the architect maybe once on the speakerphone [occurred eight years before the interview]". H2

Another reason is that some men believe that the designing and building of the home is his responsibility and so he does not show that his wife is involved to maintain this status; however, the architects interviewed claimed that they would know if a female's opinion was behind the design requirements, as stated by A2 above.

> "Some do not involve their wives in the design, they want to do everything". H2

> "Residential clients always come as couples, besides from one project, the man came alone. His personality was like that, according to him, he is the one that understands and knows everything. This caused issues later on, as he had 2 wives and they disliked many of his selections after completing the design, and we had to go over them again".

On the other hand, a shift in the understanding of females' position and role in residential designs is clear.

> "We believe that the wife has a big role". A2

> "Success of a design has to be through negotiation with both, the husband and wife; the wife more in our culture, because the house is more for her. For example, she knows if she needs a kitchen or two, and what it should overlook, maybe a garden so she can observe her children while they play. She may also like to be near her husband when he is in the living room". A8

Many wives comment on the design of their houses, and some may take complete control, not over the design alone, but also over the construction process. This occurs even in strongly conservative social groups. It was noted that the level of education and job status of the female, had a corresponding relationship with the level of involvement.

> "With some couples, the wife takes responsibility for everything and has confidence, but with others, they have to make joint decisions with the husband". A2

> "Whoever brings his wife with him does not later have any issues". A10

While many women do not play a major role in the design of their house's layout, they certainly do exert control over décor and furnishing, which is perceived to be a more feminine task than structural/building.

> "I notice that usually when the interior design stage starts, the wife shows up, but during the architectural stage, it is usually the man". A2

H4 for example, did not have much involvement in the family's complex design, as everything was arranged by the males in the family. Eventually, she took over the interior design including finishes with an interior designer, she did however consult family members about her decisions.

As a result of this change in attitude towards women's involvement in the design of houses, new dimensions have that in HDs. One aspect that manifests as a positive influence on the designs may be because women use and understand their home components more than men, so they can specify their needs in a more practical way. Houses are designed inside-out and smaller details are considered, unlike when applying outside-in approaches, where users are offered an envelope that they are then required to fit their lifestyle requirements into.

Nevertheless, there have been notes on how some women's interference with a design can cause issues and delay a project. A reason given for this by A6 is that females do not understand drawings, while men are simpler to deal with, as they can be more tolerant and practical. A9 suggests that women combine interior design ideas during architectural design discussions, which is not ideal and can waste unnecessary time.

However, the researcher believes that describing interior design ideas should benefit the architect by providing further understanding about how the layout should be designed and if any architectural features can be added in the early stages, e.g. window seats or wall niches/ recesses.

Female involvement in residential architecture is no longer as homeowners/clients alone, but more significantly as designers, i.e. architects and interior designers who design residential layouts and interiors. Their numbers are rising rapidly, whether employed by firms or as office owners. This new perspective has influenced the field, especially interior design, affecting everything from simple décor and concept to a professional level that most people today are aware of and acknowledge. Nevertheless, it is still not completely acceptable or comprehended by everyone yet, as A10 states:

> "Some male clients actually do not tell their wives -I guess- that they are working with a female designer, but eventually they will know, as my name is printed on all pages [smiles]". A10

(T1) 1.5 Changes to approaches to housekeeping

The norm in SA is to have a foreign live-in housekeeper employed on a two-year contract that can be renewed. However, some unauthorised providers offer monthly and hourly services; this is not legal[14] and causes many problems. In recent years, the local media has highlighted many issues and destructive crimes, all of which were carried out by unprofessional housekeepers, especially those involving crimes against children. This has raised public awareness about the situation, and altered attitudes towards the employment of housekeepers.

> "The problems that come with housekeepers today outweigh their usefulness". H5

On the other hand, fees for providing housekeepers and their salaries have risen considerably in the past few years. Regulations have also been reformed to control this activity and minimise any negative impact. However, they remain a necessity in the majority of households. There are many reasons causing this necessity, mainly a lack of alternative provisions. There is a growing demand for part-time/hourly housekeeping services, especially for small and new families. This is a result of changes in lifestyles and prosperity levels, the fragmentation of the concept of extended family living has an impact on lifestyle. Therefore, authorities are considering a new system that allows part-time work for residential purposes.

> "After actually living alone with my husband [in the UK while studying], I discovered that I can manage without a housekeeper…also, my husband is strongly against having one…I might be considering someone by hour, so she comes, does the laundry and wipes the floors then leaves". H5

All these changes can have an impact on house designs, changes in houses' forms/sizes also affect housekeeping decisions. Moreover, having nannies instead of a housekeeper is another option emerging to suit new lifestyles.

[14] In 2013, all expats who violated the residency and work regulations were offered a fixed period by the Ministries of Interior and Labour to correct their statuses in accordance with regulations. After the period expired, penalties were applied against violator. This campaign minimised the act of part-time workers/housekeepers.

(T1) 1.6 Attitudes towards the architectural profession

People's understanding about architecture and interior design have shifted from the shallow perception that architects only complete part of a routine process, e.g. they are employed to provide drawings and acquire building permits. This has long been the attitude towards average architectural services, which are common. However, today architects and designers are widely appreciated for their design abilities; clients search for the most creative and talented then trust them with their designs, whereas formerly, low cost was prioritised.

> "People's understanding of the profession has really changed a lot…you cannot believe the number of customers that say finish all the work and when it is done I will take it home…they have extreme trust in us". A10

> "Previously, clients say 'I want this', and you were expected to do what they asked for without discussing it. Now it is different, they will consult you and listen to what you suggest". A11

This has led to shifts in architects' perceptions of themselves as well. Although most still approach architecture as a business, they combine this with a search for quality.

The increase in native architects and competitiveness amongst them has motivated this attitude. Other factors have also supported change, such as the developing the role of the SCE, and people's rising awareness as a result of exploration.

Not only have attitudes towards the profession changed, the ability to comprehend and analyse designs has also increased among people. Moreover, because they appreciate the design process, people are more open to talk and discuss their needs and explain their social life.

> "People's understanding of designing homes increased". A2

> "People are more open to talk about their social life". A10

> "Today clients come knowing what they want". A11

This by no means suggests all attitudes have changed; however, it is not within the scope of this research to confirm that. It is rather to demonstrate the direction of changes, which are likely to accelerate in the future.

(T1) 1.7 Resistance to change

Although change is -in most cases- linked to becoming a modern contemporary person/family, some socio-cultural aspects can be deeply rooted in a group or individual's beliefs and lifestyle, and any modifications to those aspects are then completely unacceptable (see Hadjiyanni and Helle (2009: 463)). This is to say, even if the general perceptions of people is that 'things change', 'people change', or 'nothing is the same', this does not cover all Saudis' or all the socio-cultural variables associated with residential architecture.

> "Some people do not like to change". H2

> "There are still some people against flexibility in the design and insist on old concepts". A9

Certainly, socio-cultural aspects are the most difficult to adjust to as they involve the fact that a person may be judged and criticised by other members of society, especially those close to them. However, adjustment or even reformation of existing behaviours or phenomena occurs gradually, i.e. in stages.

There is always someone who has greater courage and initiates change. He/she is then either criticised or copied/followed. Especially in the case of design, it can be difficult for most people to imagine and picture what something might look like, even more so, how they will function around it. It is only when they experience a new thing that they can accept it and decide whether to adopt it or not.

> "I am the first in our family to adopt an open design. They all liked it, maybe they will copy me". H6

This argument was reflected during discussions of multiple residential features explored by the researcher. A clear example was the adoption of an open plan living space. Although it requires many different layouts and differs in terms of the level of openness, some Saudis reject this idea completely e.g. H7. They are unable to alter their lifestyle to accommodate a different contextual setting. Some simply too concerned with what others will say. They will not risk what is more important to them, i.e. by pleasing their social group or remaining loyal to their inherited beliefs.

> "A neighbour here saw my open layout and did not like the concept". H6

> "For eleven years, nothing changed in the layout design in this area. Everything has to be segregated and with separate entrances…etc." A6

(T1) 2. Socio-cultural phenomena in Saudi houses

Saudi society embraces numerous socio-cultural phenomena and concepts linked to housing contexts. These phenomena differ and there are variations between different regions and/or social backgrounds, which make it difficult to cover them inclusively in this study. However, in order to overcome such variations, the researcher has developed a set of classifications that aims to cover as many house-related socio-cultural phenomena as possible.

Through the data gathering and analysis process, many phenomena and concepts have been identified. These were used to generate three sub-categories to describe socio-cultural phenomena in Saudi houses. These are:

1. Socio-cultural phenomena derived from Islam;
2. General socio-cultural concepts;
3. Style and design concepts selections; and
4. Socio-cultural phenomena outside the house.

These sub-categories are explained further with examples in the following sections.

(T1) 2.1 Socio-cultural phenomena derived from Islam

1. Hospitality

Hospitality is a distinguishing moral requirement in the Islamic religion. Islam urges followers to observe this principle and links it to true faith. This is reflected in Saudi Arabia's socio-culture, it influences behaviour and the ways it is interpreted in the context of the home.

All homeowners interviewed in their occupied homes seated the researcher in their best reception space and presented her with Arabic coffee, tea and cakes. This is just a simple indication of the hospitality phenomenon.

> "I will receive guests in the main reception (majlis), it will be a tidy area. I love to entertain". H5

Reception spaces are given special attention during the layout design. They are central to design discussions, and are usually, if not always, located at the front of the house, i.e. the best

location, and are large in size. All houses and plans reviewed had a separate dining room, reflecting this concept further. Additionally, the most expensive furniture and accessories are added to guest spaces and considerable effort is put into their decoration, so that they reflect formality and luxury. Foremost, the aim is to provide a context wherein owners can present their guests with the highest hospitality standards possible.

> "Some people put things/spaces in their houses for only when guests are there". H1

Most interviewees agreed that a large percentage of the built area in houses is dedicated to receiving guests, despite the fact that these areas are rarely used. Some argued that this tendency is wasteful and compromises other more frequently used spaces. In fact, other spaces have gained comparable importance recently, e.g. family zones, reception rooms maintain their quality (Figure 4.2). More about guest zones are discussed later in section 0.

> "People build 35% of their houses for hospitality, and yet these spaces are only used twice a year on average. This is a problem". D1

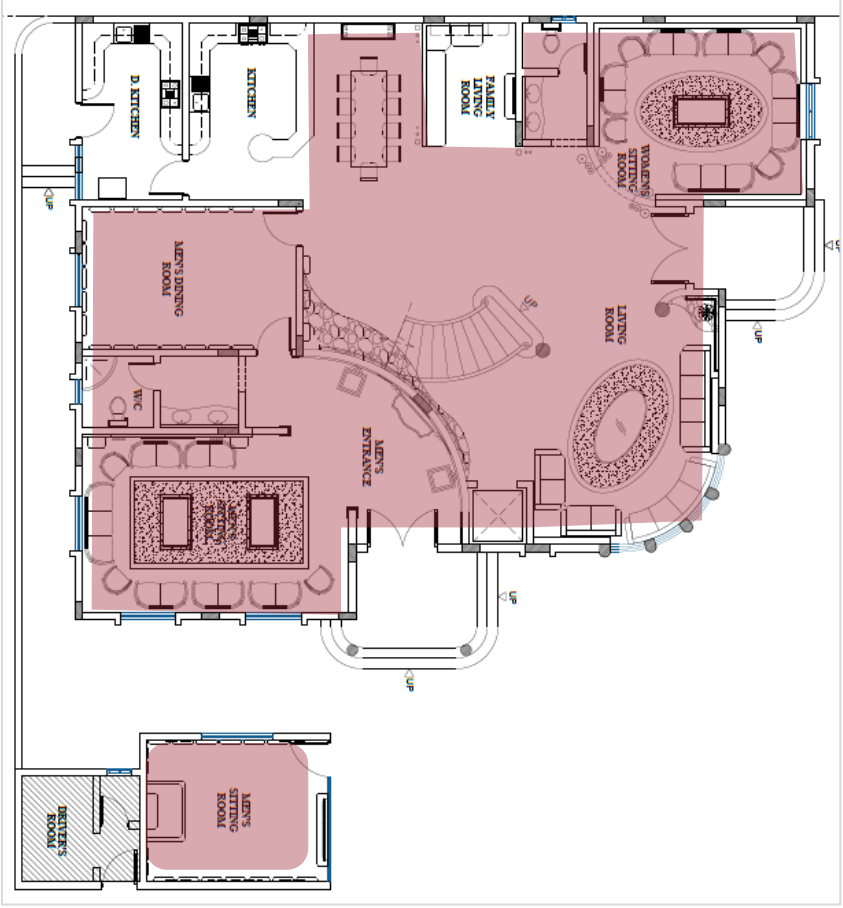


Figure 4.2 Spaces aimed for guests in the ground floor level of a new house

Conversely, many people accommodate large events outside their homes, i.e. mainly in 'estiraha' (see (T1) 3.5, point: 2 Estiraha) even if they have the space. One of the justifications made for this, is that houses, which have been extensively and expensively furnished, can be damaged especially when there are children around. In addition, holding events at estiraha can be easier and less stressful for homeowners. It is worth mentioning that some people own their own estiraha and prefer to use them even for small occasions or at weekends, as they offer a different atmosphere away from houses.

> "The expanding number of people led them to take their celebrations out of their homes". H6

Some houses, large family complexes in particular, have developed external reception spaces that are similar in concept to the estiraha, as an alternative to indoor receptions although indoor ones still exist, e.g. H4 house complex Figure 4.3.

> "All family members meet in the estiraha in the weekend". H4

Nevertheless, this phenomenon contravenes the sentiment of greeting guests in one's own home, even though the hospitality aspect remains.

2. Privacy

The analysis revealed three easily overlapped concepts commonly applicable to residential settings, i.e. privacy, conservation and segregation. These undoubtedly interrelate and affect one another; however, in the following sections the researcher distinguishes between these concepts with the support of examples from the field study.

The term privacy in houses mainly describes the relationship with the outdoor environment. Secondary uses of the term have been to describe bedroom/personal spaces, when discussing relations with other home users. Discussions and house-plan analyses show that a level of privacy is also considered in regard to housekeepers and live-in drivers. This is not to be confused with the notion of segregation, which is explained in point 4 below.

> "One of the main things repeated in our designs, is privacy between neighbours". A1

Figure 4.3 External reception and recreation building (estiraha) in a family complex (H4)

Privacy in the outdoor context is represented by the visually obvious 2-meter high boundary-wall surrounding all Saudi houses. Although the main purpose of these walls is visual privacy, they also offer a security element. Many houses extend these boundaries beyond the standard i.e. specified height by regulations, lightweight non-permanent structures are used for this, e.g. plastic, aluminium and corrugated screens. This often adds to the effect of preventing neighbouring houses/buildings from overlooking the house (see Eben Saleh (2001); and Abu-Ghazzeh (1996)).

Window positioning and orientation provide an important dilemma in regard to the design of privacy (see Akbar (2000)). These factors are not always considered during the design process,

especially during development and low standard HD. Owners consider them later, using other means e.g. curtains, aluminium shutters and extended boundary screens Figure 4.4.

> "Our room and our son's room had a window that would overlook the neighbours, but during construction we decided they would not be open, and relied on the ones pointing towards the street instead. However, one of our neighbours overlooks us". H2

> "We do not have any windows on the sides, only few at the back". H3

> "The windows are covered to avoid the neighbours overlooking them, this has the effect of suffocating your family". D1

Figure 4.4 Extending boundary walls for privacy

Front boundary walls, including main gate/s and door/s do not only have practical functions, but also serve aesthetic purposes and offer the opportunity to convey one's personal style.

On the other hand, privacy inside the home can be based on a number of approaches, for example, the distribution of bedrooms on the first floor. Girls' rooms may be grouped next to each other and boys' rooms also.

The housekeeper/s' room has become a standard requirement in most housing layouts, i.e. on the roof level, that is the second floor. Some people, however, give this further attention, asking for separate staircases that allow the housekeepers to move between levels without passing by family members Figure 4.5.

> "More conservative people may say, I want the maid to go to her room using a separated staircase from the kitchen, I don't want her to mix with us, plus they have old sons...etc." A10

"The wife will tell you how she wants the relationship to be with the housekeeper, is it privacy or control she is aiming for". A8

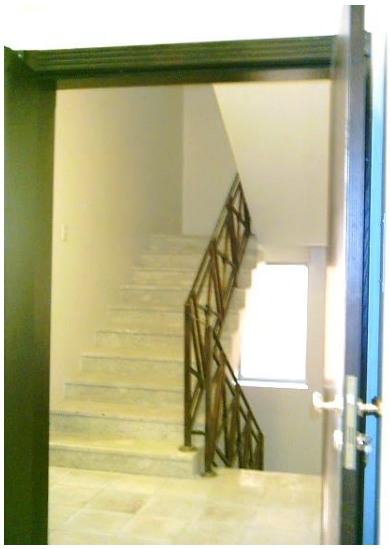


Figure 4.5 Concealed second/service stair shaft

The driver's room, which is located at the front setback of the house, will typically have an external entrance, i.e. on the street, not overlooking the windows inside the setback/garden. Nevertheless, in some homes, the driver's door and the garage open to the setback, but in this case, homeowners will mostly use front garden to access the home (not for recreation purposes), e.g. H2, Figure 4.6.

"We go out and in covered, so no one sees us". H2

Figure 4.6 Driver's room and car-garage opening to the front setback (H2)

After all, many aspects of privacy are taken for granted by architects, since most requirements are common to all Saudi houses. It is only when different approaches are considered, privacy then becomes a topic of discussion during the design process.

> "We consider privacy when we are designing, i.e. so no one sees my daughter and my son will not bother the neighbour's daughter". A4

3. Conservativeness

In this context, conservativeness arose twice, once in reference to the design conversation between architects and clients, the second was in relation to the level of segregation of the opposite genders that is required in the HD.

Clients vary in their level of openness when it comes to describing their family structure, home needs, and lifestyle. Some people are very conservative when describing their needs and architects are cautious about how to approach them about personal/social details.

> [Researcher: what differs clients' openness?] "Age, the younger he is the more tolerant, his occupation/job rank, travel experience and which city he is coming from i.e. Dammam, Alkhobar, or AlHasa". A9

> "No…no, we do not talk about family details". A6

> "The client should talk about their social life if they want. I do not feel I should interfere so none of us feels embarrassed. We try to balance, if they want they will talk about it, and if they want a room for a child, we will do it [i.e. regardless of details]". A11

In some cases, even the number of females in the family is not mentioned. However, clients who are more understanding go into detailed description of their family members and lifestyle. Architects' opinions were divided in this regard during interview, some perceived a limited description of lifestyle as an obstruction to providing a good design, while others found it normal and acceptable.

> "The most interesting part in designing homes is the chance to listen to people, I can write 100 stories of Saudi families. They gave me the opportunity to expand on the social aspects and understand what it means, the woman and how she lives in her home and children and how this changes with age and her relationship with her neighbours and community". A1

> "I ask my clients about everything… clients differ, but the majority will be open to talk". A1

In regard to opposite gender relations and its influence on HD, this differed between Saudi families, in that some would choose to completely separate relatives during events, while others would mix with the opposite gender but usually just close relatives, e.g. cousins and brothers-in-law. This had an influence on some housing layout designs, as lifestyles differed accordingly. More is explained about this in the next point.

> "These people mix with their own relatives, but if the number is large, they may spread out". A2

4. Segregation

Segregation is performed in Saudi houses primarily to separate unrelated genders[15]. It is applied through the division of spaces, primarily guest receptions.

> "Even with less conservative families, if there are a large number of men, they do not want them to see their family". A2

This resulted in a duplication of spaces (Figure 4.7) and clustered closed layouts in contemporary houses, which contrasts with the traditional open-court layout.

What is labelled as 'open-plan' HD is a developed approach towards avoiding clustered layouts, while maintaining all necessary segregation. In this case, the family section is the area that is most open and it may also include the women's reception room as Figure 4.7 (more details are under (T2) 3.20). This approach also highlights the change in lifestyle and the increased interest in having a family zone (discussed in 1(T1) 1.1, point: 3).

> "We say this [segregation] is part of our customs and we should maintain it, so we say we separate guests but open up the family area". A2

Nonetheless, segregation remained in the primary reception area, i.e. the majlis, which is generally used for male guests.

> "The majlis is preferred for my seating [female] guest because it isolates sounds". H2

[15] Mahrum, i.e. unmarriageable kin/direct relatives, e.g. uncles, nephews and brothers, do not require segregation.

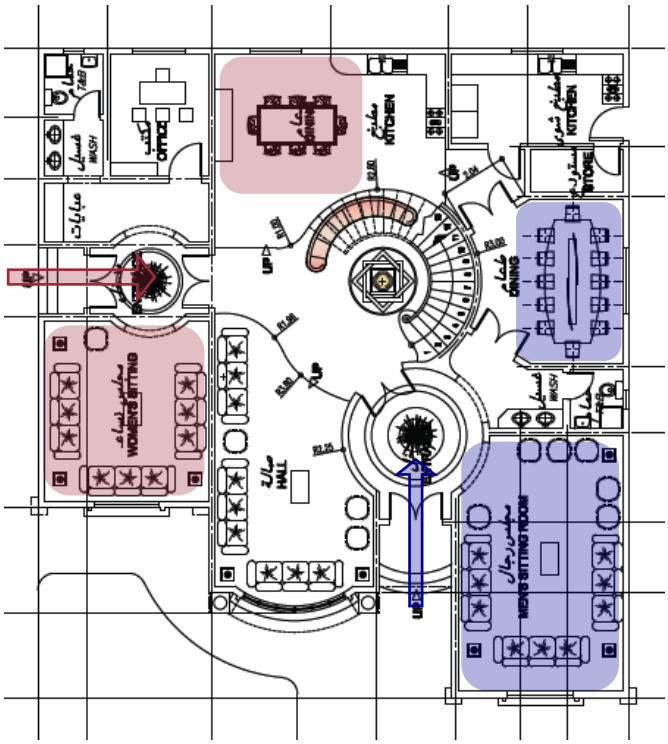


Figure 4.7 House plan with duplicated spaces because of segregation purposes

Many houses have external receptions, e.g. molhaq[16]/dewaniah, so that family members have more freedom in the event that one of their members has guests while they are in the house.

> "There are some people who build an external dewaniah". A2

Another type of segregation advised by the Islamic religion is between different gendered siblings during sleep when over the age of seven. Although this was not highlighted during interviews, all HDs had separate bedrooms for boys and girls.

5. Orienting spaces/objects

The only aspect mentioned here referred to toilet orientation. In Islam, a person must not face the 'qiblah'[17] while using the toilet. However, Muslim advisors suggest that this is only the case outdoors, and if it is in a walled space, then this is considered a separator. Nevertheless, many

[16] A detached room built at the front of the house for casual use, especially by males.

[17] Qiblah is the direction Muslim should face when praying. It is fixed towards the Ka'abah in Makkah.

people find it preferable to maintain this need and insure no toilet seats face the qiblah in the design. Architects already consider this obligation to be an embedded requirement.

> "It had mistakes in the toilets, they all were facing the qiblah. I had to change it. Even if there is a partition wall, psychologically, it does not feel right". A10

6. Relation with neighbours

Testimonial from the Quran and Hadith commands Muslims to take good care of their neighbours, up to the fortieth on each side of a person's house.

Modern lifestyles and residential neighbourhood' layouts, i.e. the gridiron system, have reduced these relations dramatically. Although neighbours continue to maintain good manners toward each other, they do not interact as in earlier more traditional settings.

> "We know all our neighbours but not so well like before…I visited them, but not all, these duplexes are so many, what can you cover! The close neighbours, and that is fine…Sometimes there are seminars in the mosque we meet there". H2

Children used to meet more often than they do today; however, they are still a reason for people to get to know each other.

> "My son is 7 years old, he has made friends with our neighbour's daughter. Now we know each other because of him". A4

(T1) 2.2 General socio-cultural concepts

1. Gender differences

Differences are often linked to privacy, conservativeness and segregation requirements, as discussed above. Their impact on HDs may be briefly described in the provision of spaces that are especially meant for one part of the family, e.g. external molhaq/dewaniah for the boys, i.e. the males in the family.

> "Since the girls are girls and their friends visit, we added a shared salah [sitting room] in between their rooms for them… For the boys, we had an outside dewaniah, they do not have a salah with their rooms". H3

> "We need one more bathroom, in case we have different gender children". H5

Other than that are secondary requirements that vary between people and their lifestyles. For instance, women will ask for a dressing room, while men may want an office space.

> "I have my wardrobe space, you know, women need space". H2

Another angle pertaining to this was presented in the fieldwork with architects and interior designers. According to the regulations, any office that employs females alongside males is required to offer them a separate room. Many females are now opening their own offices and have arranged their own access system. For example, A11's office had all female employees; they had an intercom system for visitors/clients, and often met with clients using prearranged appointments. So when they knew they had a male client coming in, they prepare by dressing accordingly.

Although it is becoming more acceptable to see and work with a professional female worker in SA, some people continued to find it difficult, and in some cases it is deemed unacceptable.

> "A client once brought a ready plan for us to copy, it had some problems so we amended it. Afterwards when he saw it, he said no, you are giving me a readymade plan from the internet. He was very rude, so the manager had to withdraw from the project". A11

2. Kinship

Kinship here refers to any relationship with family members, e.g. parents and older children, who live-in or out of the house but have an influence on the design decisions. Likewise, extended families that live close, whether in an apartment building or in a group of houses (i.e. family complex) influence the form of the residential building.

> "This house has a duplex next to it for the owner's mother and sister". A1

> "Few people ask for a guest suite. The majority are people who are living in the Eastern Province but are not from here, as their families come to visit and stay with them. But many design a complete wing [suite] for their old parents, i.e. a living space, bedroom and a bathroom". A10

> "The buyer comes with a request or two, then his wife suggests something, it has happened in front of me that she brings her sisters and he brings his brothers, we all sit and discuss changes!" D1

Depending on a number of conditions, elderly parents often remain in their own homes with one or more of their children living with them, or have in-home care but with direct and frequent contact from their children. The alternative is that they may live with one of their children at his/her house to be looked after. This is to say, the notion of taking care of elderly parents is not optional, it is a socio-cultural phenomenon derived from religious rules. Therefore, parents will

always be at home, and this phenomenon is always acknowledged socially as the norm, although the application of it differs based on financial and social circumstances and settings.

Another commonly observed phenomenon is designing a room for married daughters or leaving a room for them if they get married after they have lived in the house previously. This is because they are expected to come and stay at their parents' house on various occasions[18].

3. Regional background

Although the architects interviewed referred to some influence from regional background on the design process; this cannot be generalised. Since other factors, education mainly (see next point), has a greater influence on design decisions.

> "I found that clients from Alkhobar are more tolerant, then Dammam then Alhasa[19]". A9

> "Even where they are from makes a difference in the way they represent themselves. I had a pilot from Alhasa and another from Dammam; they were both different, as the one from Alhasa was more conservative". A10

4. Education and occupation

[18] It is a socio-cultural phenomenon that some married daughters will stay over at her parents' house for a couple of days or so just for a change. This is especially common during the postnatal period, which varies in length but is usually 40 days or up to 2 months. Her family supports her during recovery, and her mother/sisters can help her with the new baby, they also keep her company.

During this period, friends and relatives come to visit the daughter and congratulate the family on their new arrival on various days, sometimes every day. They come with a variety of gifts, which range from chocolate and baby gifts to a variable amount of money depending on the closeness of kinship. Receiving all the guests at the daughter's home can be difficult for her. Therefore, she stays at her mother's home, she also provides special meals and homemade herbal remedies that are consumed during that period.

Nonetheless, many of these socio-cultural practices and rituals are changing, even in what may seem minor details, e.g. the daughter used to stay in bed even when people visited. The bed was in the sitting room so people could sit around it, and it was unacceptable to show the ability to undertake activity. Even the way she dressed was specified, she had to wear a home gown, especially purchased for such an occasion. This has changed within many families, especially middle to higher-class ones that live in cities.

New mothers now only stay for a couple of weeks at her parents' home, and often arrange a reception day so that people come at one time. Closer relatives may still visit on different days but they arrange this quickly through a phone call. The daughter will stay seated with no beds around, will be dressed properly, and may even have make-up on. In addition, some receptions may be held at the hospital during her stay, which ranges between 3-7 days depending on the nature of the delivery and the mother's/new baby's condition.

[19] Alkhobar, Dammam and Alhasa are all cities in the Eastern Provence of SA.

As mentioned above, the findings demonstrate that educational level and type i.e. field and location of study, have a strong influence on Saudis' thinking and the way they perceive residential architecture. This variable, and the type of job a person holds can lead them to develop stronger and bolder ideas than would be expected when only considering his/her socio-cultural background. This is not only a result of an increase in knowledge, but also the sense of confidence that comes with it.

> "[researcher: does client's regional background influence the exterior design?] Not from where he came from, but his educational background has a very big influence". A2

> "The more educated the husband is, the more the wife is involved in the process". A2

> "We are ARAMCO[20] people [smiles]". H2

> "My husband did his Master's in traditional architecture. So he was always visiting the old houses of Alhasa, he likes old things". H3

5. Finances

Money plays a significant role in shaping the form and quality of the houses in SA, and consequently their contextual socio-culture.

> "As long as it is good quality, even if it costs more". H1

> "He [a person who disliked open designs] may be worried about electricity bills in an open space [since it costs more to cool]". H6

> "If he has 500 thousand SR, it will hardly allow him a little flat, not a big one, he will say I do not want a majlis, I will not invite anyone at home we will go to an estiraha instead". D2

Money not only effects design and building costs, but also a person's financial status, as it effects the other phenomena influencing HD decisions, e.g. hospitality and travel destinations and experiences.

[20] ARAMCO employees tend to be characterised with shared features such as being more open and precise.

> "Economic conditions definitely impact on social life. No money… [means] nothing... no invitations [i.e. affects reception rooms requirements]" D1

> "We Saudis travelled abroad and were very knowledgeable, there is not a place we did not go to, we brought designs from other civilisations with us". A4

People also have very different ideas or beliefs about how much should be spent on a house.

> "They [people from a certain background in a specific location in Dammam] have a certain understanding/knowledge about how much should be spent on a house design i.e. 5-6 thousand SR)". D2

> "The mentality of these people [i.e. who prefer expensive sources] is difficult to deal with. One will say I care about the brand name; I want to say my home was decorated by X. They do not care that you save them money". A10

6. Lifestyle

The Saudi lifestyle is quite homogeneous overall; however, differences and special requirements do exist between homeowners.

> "Things vary between one family and another. Each family has the right to live as they please". A8

> "I like to arrange flowers and do crafts". H2

> "We used to have a projector/cinema in the dining room in our old apartment. We had fun with it, so we decided to make this room a cinema room, since we have other spaces for guests". H3

Some of the common lifestyle features that affect HDs are: having housekeepers, regular social events[21], lunch being the main meal, eating takeaway food quite often, etc.

> "I expect 20-25 guests of each gender during Eid". H1

> "We sit upstairs [upper living space], but we have lunch [main course] downstairs every day. We do have a small area upstairs if someone wants to have a light meal". H2

[21] During Eid celebrations, members of an extended family will usually gather at the oldest member's house. Furthermore, people with a high social status will usually have many visitors during Eid period. Houses become very crowded as all the women and men along with their children are invited together.

There are other lifestyle attitudes arising due to the nature of the climate, air-conditioning is a compulsory requirement in all Saudi houses, it uses durable low maintenance materials and building structures.

> "We do not open windows in our climate". H1

It is difficult to convince a client to adapt to a new lifestyle through introducing him/her to a new HD idea, even if it requires only a slight modification to his/her lifestyle. Few people are willing to accept new ideas that they have not previously encountered elsewhere.

> "They have a lifestyle and do not want to change it". A9

> "Nobody knows your needs like yourself; what your social context is, if you have guests, how many people you have…the way you live". H2[22]

In contrast with this view, however, is evidence showing that contemporary residential forms and advanced systems/technology affect lifestyles. This has already been observed as changes to traditional houses have been initiated (as discussed in Chapter 2: Section 3).

> "I have relaxed a lot compared to when I lived in an apartment. However, I feel we are further from each other; I cannot go upstairs all the time and go in their [children] rooms. Especially the girls, they like to stay in their rooms with their computers. I used to shout for them and they will come, now I have to call them with the intercom, then it takes time before she comes. Therefore, I need to finish the upper living space to be closer to them". H3

The above changes primarily happen when a house is bought not custom built, as new owners need to adapt to the new layout or features, or when an architect is given complete freedom to design the house.

> "When my husband's friends come, they will stay in the majlis, also my friends will be seated there but on different days". H5[23]

> "We do not ask our clients for a program [type and number of rooms], we only take their details and create a lifestyle for them through the house design". A9

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[22] H2 defines her needs according to her social lifestyle.

[23] H5 is a homeowner who bought a house with a modern open-plan layout, so she is adapting her lifestyle to its design.

(T1) 2.3 Style and design concepts selections

Through analysis of the data, the researcher reached a conclusion that style in Saudi homes is an interpretation of one's taste, whereas, concepts are a reflection of its socio-culture. This interpretation confirms with a number of declarations advocated by researchers who relate individuals selection of styles to fashion (Salingaros 2014b; Al-Naim 2008: 144; Rapoport 1969: 135).

The statement above explains the similarities found in the layout of Saudi houses. This is to say, since people share a homogeneous socio-culture, consequently, they interpret shared beliefs and phenomena in similar ways conceptually when designing houses. However, this does not mean that this interpretation cannot be made using other means, as there are very few examples that demonstrate such attempts, or which rely heavily on architects' skills and clients' willingness to be involved.

The following example aims to illustrate the above finding in greater detail. If we suggest that the separation of unrelated genders in social events is a socio-cultural concept that is translated in design form, through the provision of segregated spaces in a home, then this is an important concept that needs to be addressed. However, the method this concept addresses effects the layout, and the design does not necessarily have to be restricted to a single approach, as is found in most Saudi houses, i.e. full structural segregation resulting with duplication of spaces e.g. Figure 4.7.

Segregation can be demonstrated in accordance with other formats and space layouts, such as through detached hospitality units, which already exist in some larger houses, these may also be used by any other part of the family. Distributing spaces at different floor levels is another possible approach, which is found in some traditional layouts and designs.

This is simply an example to demonstrate how conceptual variations in housing layout may be achieved. These attempts may be expected from architects, even if clients only accept simple alterations. Developer and architect, D2, presented a relatively new direction in terms of ultra-modern residential developments. He states:

> "I started a completely new ideology, and thanks to Allah, I succeeded". D2

Architect A8, for instance, strives to develop small housing layouts, he says:

> "I have a challenge, to achieve ultimate privacy and ultimate openness in small Saudi houses. Once this is achieved, a large slice of people will be served, because we all want high-privacy and we all want openness". A8

Clients' needs should not be taken for granted by architects (as found with some), and negotiations should always be attempted. In particular, developing the designs of buildings is one of the roles of the architectural profession and architects should develop a means to perform this.

On the other hand, in the case of 'taste', people have more freedom and are less concerned about being criticised by other members of their social group, i.e. since this involves surfaces not functions. Although style can vary within a social group, some groups seem to share similar tastes. The findings highlighted from this context are that people are generally aspiring to show something unique in their choices and may choose to start a new trend within their social group. However, this does not necessarily reflect a change or development in their tastes. H3 presented an example of this argument:

> "I chose a new formal kitchen 3 years ago; we are waiting for it to be installed. At the time, it was only a showroom that made hydraulic drawers and other stuff, but now, it is everywhere and cheaper. If I were yet to choose, I would select something even better and maybe more expensive. [HF**:** but would it not then become available for less after a while again?] Yes, but when I put something in, I like it to be not widely found in the market at the time, then if it does spread afterwards, that is fine". H3

> "Today most people want something out-of-the-box, but also something unique and special". A10

> "Clients ask for new things not typical designs". A11

> "All our guests say it is nice and not a common layout, the [indoor] swimming pool is the unique part, as you see it once you enter, unlike outdoor swimming pools". H3

In spite of this attitude, a relatively new direction on residential development projects as regards identical forms and styles has not been widely welcomed. Developers have to make many allowances to ensure their houses sell. They often select flexible layout designs, so that partition walls can be added or removed according to buyers' preferences (Figure 4.8).

> "I care about certain aspects of a design, i.e. easy to modify in the future, the design I have can be 3, 4, 5, or 6 rooms. Designed with no columns inside the

house, so if he has more children he can close the upper living room and transfer it to a bedroom". D1

Figure 4.8 Flexible development' layout design
Source: Mada-co.com.sa 2012

They also provide different options regarding exterior styles and allow buyers to alter the layout and choose their own finishing features if the property was bought while still under construction Figure 4.9.

Figure 4.9 Modifications made by a house buyer to a development house
Source: Mada-co.com.sa 2012

Personal taste is inherited and modified using various sources, initially through parents and close family members, then through interaction with the outer world e.g. school, friends and work.

"In my parents' house modern furniture doesn't fit and my mother doesn't like my taste". H5

"The son's house was modern, while his father's was more classical". A10

Observation shows that media, especially television, has a big influence on a wide portion of society. Foreign movies and television series dubbed into Arabic make such shows more attractive to people and have a great impact on many aspects of people's lifestyles, certainly including on their tastes.

(T1) 2.4 Socio-cultural phenomena outside the house

Outside the house has two areas: an outdoor space surrounding the house but within its boundary walls; and an external street area in which the house is located.

1. The outdoor space

Homeowners in SA are using their outdoor spaces much less than formerly, to the extent that some hardly use it at all. Many components and phenomena relate to this. Section (T1) 3.2, explains this variable and the phenomena incorporated with it in greater detail.

2. The street and neighbourhood

The most outstanding features/buildings in Saudi neighbourhoods are Mosques, schools, small neighbourhood parks, the varying sizes of commercial buildings and shops (mainly on the outskirts of neighbourhoods) e.g. banks, grocery shops, restaurants …etc. (Figure 4.10).

Figure 4.10 Commercial shops at neighbourhood' skirting, Dhahran-SA
Source: Google Maps

The front street of a house in an earlier modern setting played a stronger role than it does today in terms of reinforcing neighbours' relationships. Nevertheless, although people tend to stay behind closed doors, mosques and other neighbourhood facilities help to sustain some of the

socio-cultural relationships between neighbours; however, this benefits males more than females, as they use these places more often. A sense of belonging and responsibility towards the surrounding context of one's house still exists, although it is becoming less evident in practice; this was observed during the course of the study (also see (T1) 2.1, point: 6 Relation with neighbours).

(T1) 3. Semantics of Saudi residential-architecture

Saudi houses are quite similar to many other houses elsewhere in the world, in terms of their main spatial components. However, socio-cultural variables define these spaces differently. In the next pages, the semantics of Saudi houses and their different spaces is explained based on findings from the data analysis.

Two examples of housing layouts are presented below, Figure 4.11 and Figure 4.12. These are intended to support the discussions in this section and to help readers to link the phenomena with its physical component. The houses presented are large family houses; however, in terms of layout, they are similar to others, although the spaces are in smaller houses are smaller, especially the circulation/foyer areas, and some spaces merge into one another e.g. the women's reception and the ground floor living room.

(T1) 3.1 The notion of 'house'

Houses have a significant meaning for Saudi people. A meaning that is supported by the conservative nature of their social life, their homes are the place where people feel free to demonstrate who they are as individuals and to do what they like and believe is right for them socially and aesthetically i.e. design wise. It is a field that represents one's personality and identity. The home is the place of comfort, safety and the place that offers a sense of belonging.

> "My home means safety and comfort, and the chance to do what you want". H1

> "People have started to say: I want a house different from the one next to mine". G2

> "Our ancestors used to say the house that you did not face any trouble in is a blessed house". H2

> "They had a fire at the beginning and many problems led them to dislike the house". H7

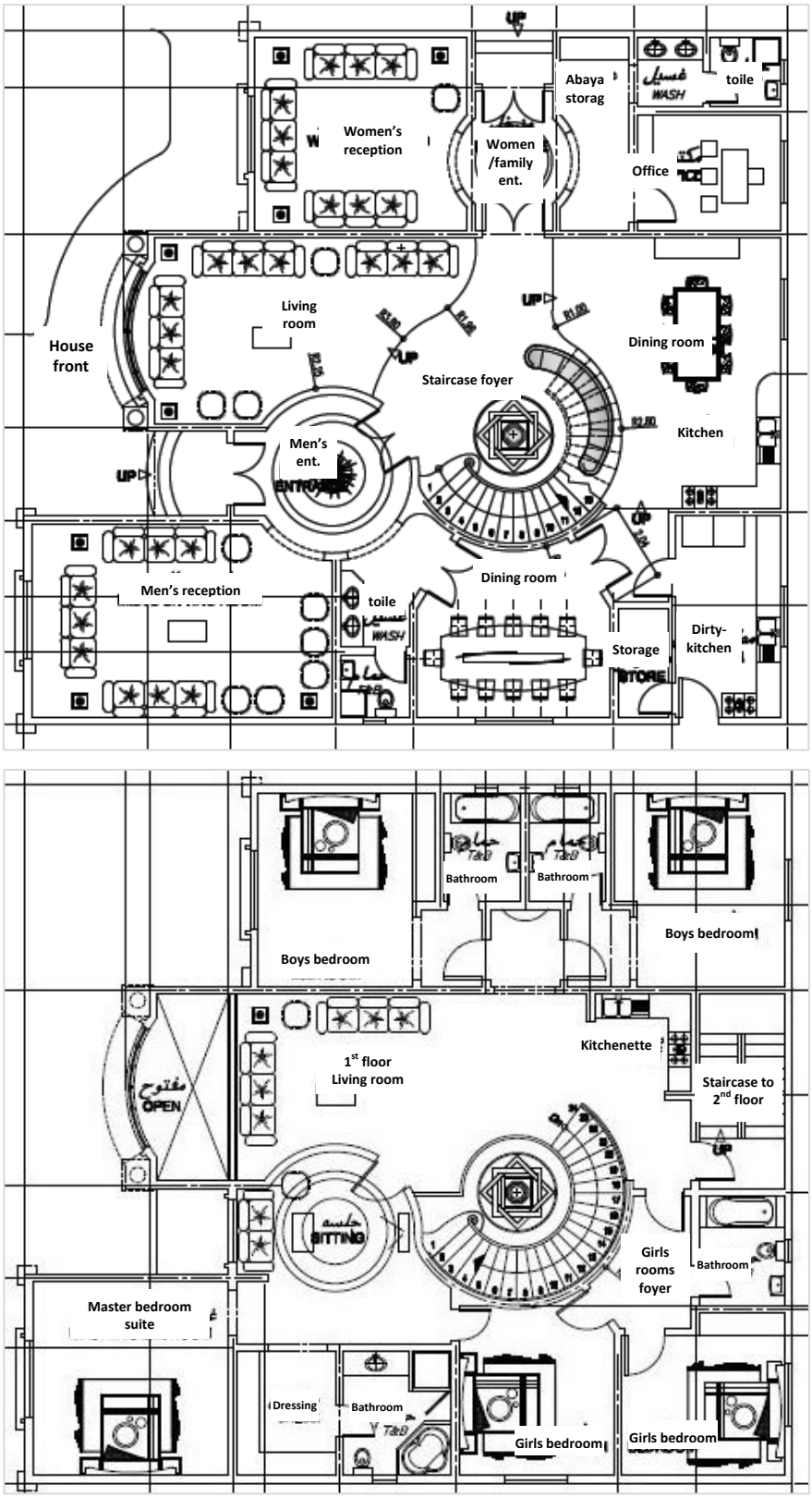


Figure 4.11 House plans example 1 (A9)

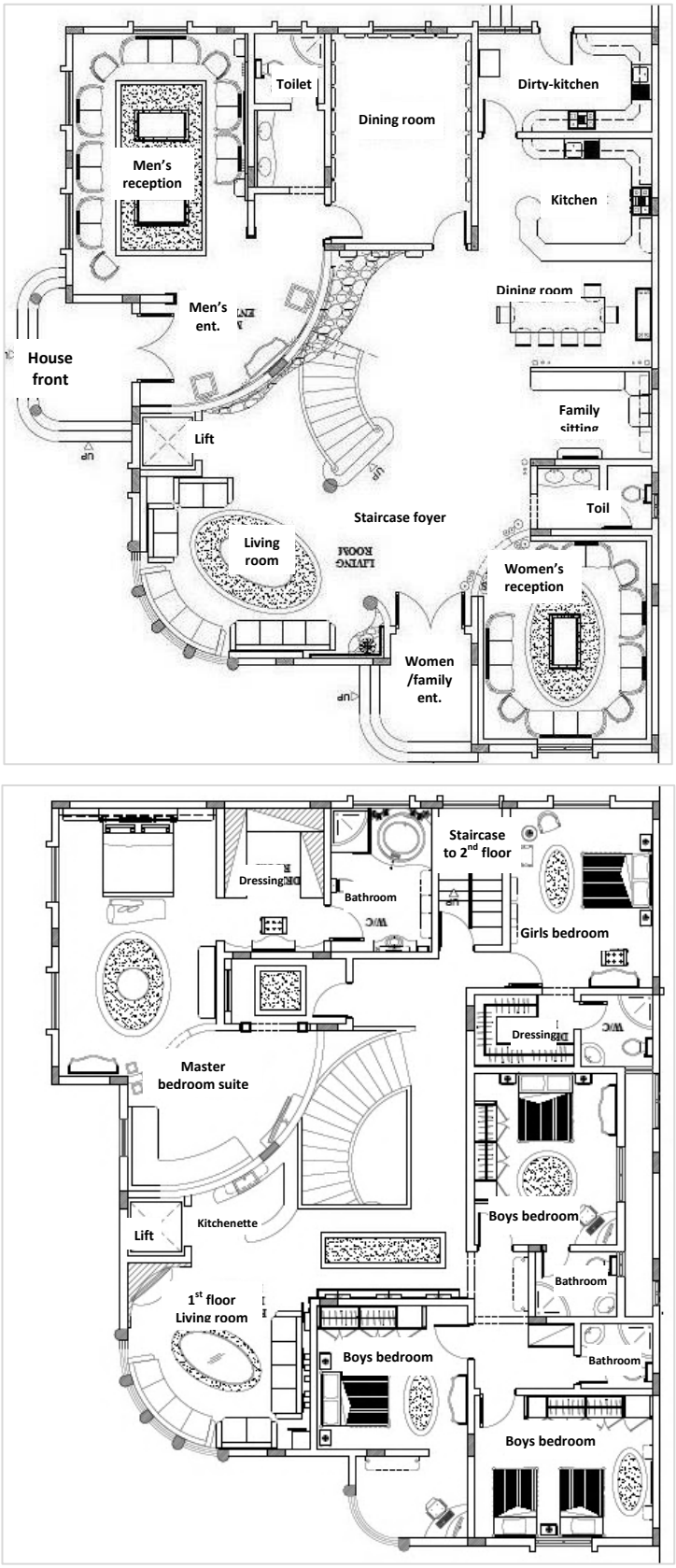


Figure 4.12 House plans example 2 (H6)

The notion of the house in the Saudi culture is linked with that of 'family'. It is rare to find a single person moving into a house without their wife or other family members. Exceptions arise when a person has to move to a different city for work, and in this case, they usually move to an apartment or work related accommodation.

> "The wife and children are those who live inside the house". D1

> "I want to see my children and see what they are doing, not in a controlling sense, but I love to see what they do". A4

Although spaces in Saudi houses are merging into one another and more open/shared layouts are being created, they retain their socio-cultural meanings and values from older settings. The functions do not differ a great deal, the methods and the functions applied are what varied in terms of how they manifested in a traditional context.

In some senses, Saudi houses reflect Saudi people's characteristics. That is to say, that although Saudi's may have different appearances in terms of how they represent themselves visually, they maintain their traditional inherited customs and socio-cultural characteristics in terms of their minds and behaviour. However, the forms they use to demonstrate these customs have evolved or reformed in response to contemporary living.

> "Houses reflect the Saudi citizen. From the inside they remain traditional Saudi houses, but they have different styles from the outside". A2

> "I think that Saudi houses are quite alike". H6

Image is an important variable in the semantics of Saudi homes. The selection of design forms and elements are used to display wealth and capability. That is, when money is spent on something, it has to show.

> "People want the image. The huge gate, the security/guard's room next to the entrance, so that people say look they have a guard next to the entrance. Wealthy people want to show their money, they do not want to spend it on something no one can see". A4

> "A woman has a complete gym in her house but does not use it!" H1

On the other hand, feeling comfortable in the house setting can vary between people since elements of comfort differ. Some people may feel comfortable if the space or objects they have look nice according to their appreciation of beauty, while others are more motivated to appreciate goods according to their monetary value, i.e. the more expensive; the more

comfortable they feel. However, some people define a comfortable house as a place that they feel physically comfortable in. Nevertheless, appearance and cost value remain important supplementary elements.

> "I want a house that reflects my characteristics, myself. It should be comfortable, easy to clean. If I am going to bring things that require other people to help carry and move them, and need to be covered so it will not get dirty, why bring it! There is no need to get something I will not use…I do not like modern furniture a lot because I feel it is not comfortable. You sit on it and it is not comfortable". H1

(T1) 3.2 The outdoor space

Here, we are referring to the surroundings within a house's boundary walls. Many examples of outdoor components are found in Saudi houses, such as, the garden and paved areas, barbeque area, swimming pool, outdoor buildings (garage, molhaq, driver's room, dirty-kitchen…etc.).

> "I added external toilets so we do not have to come in when we are outside… I have a porch with plants but it is covered/shaded [off the living room]". H1

Although the weather is not pleasing in most Saudi regions, most people maintain an interest in the outdoor space, however, only few use the space quite frequently, which is when it has been designed according to their purposes/needs (see Opoku and Abdul-Muhmin (2010)).

> "We have to notice that if a person purchases a large plot, it means they want an outdoor space, so the house itself should not cover the whole area". A10

The outdoor space generated some puzzles, in terms of this research's findings. This was due to the contrast between design requirements and the extent of actual use.

Different reasons led to this phenomenon, for instance:

1. The weather being too hot or too cold, or dusty, i.e. because of sand storms those have increased significantly the last decade due to environmental changes in the region.
2. Not feeling comfortable, because of the possibility of neighbours overlooking them.[24]

[24] See 'Abu-Ghazzeh, T., 1996. Privacy as the Basis of Architectural Planning in the Islamic Cultures of Saudi Arabia. In S. Özkan, ed. *Faith and the Built Environment: Architecture and Behavior in Islamic Cultures*. Lausanne: Comportments, pp. 269-288'

3. “It is overlooked by our neighbours, but my husband does not want to put up screens, he believes it ruins the appearance of the house”. H3

4. Changes in lifestyle, as people developed less interest in activities that used to be carried out in the garden, such as morning and afternoon teas or children playing physical games outside.

Nevertheless, people give special attention to the design of their outside space, the most common requirement from an unused nicely designed outdoor space was beauty. That is, it should look nice when leaving or entering the house, or from a window overlooking it from the inside, i.e. during the daytime.

> “We do not sit in the hosh [outdoor space]”. H2

> “The sliding-door window here in the living room is very nice when the weather is cool as it is north facing. It is a nice view in the morning when you are having breakfast”. H3 (see Figure 4.13)

> “From mid-May to mid-October we have a good season, even winter is not bad, so the time spent outdoors is much longer than in Europe. However, we need to understand the details and find the right solutions”. A8

Figure 4.13 Outdoor space for internal views

(T1) 3.3 House layout concept

The main finding in terms of socio-cultural influence on housing layout related to the conceptual division of the layout into zones, i.e. private and semi-private (A1 and A5). The private zone represents the family’s spaces, especially on the first floor and in the women’s

reception room, which in many recent designs have merged with the downstairs living room. While semi-private zones are represented in the reception rooms.

(T1) 3.4 External openings

1. Windows

Although most houses have standard windows (e.g. Figure 4.14), large, low windows are being put into many contemporary houses (e.g. Figure 4.15).

> "They always want large windows for lighting, and if they ask for small windows then there will be many of them". A2

Figure 4.14 Houses with standard size windows

Figure 4.15 Houses with above average window sizes

The main purpose of windows is light and views as all houses are air-conditioned, and windows are only open for short periods for additional ventilation. Nevertheless, glass surfaces on many occasions are added for aesthetic reasons.

> "We do not open windows in our climate". H1

> "We need special curtains so that they do not ruin the view". H3

Few examples show consideration of environmental conditions in terms of the orientation of windows.

> "We try to avoid having western windows [to avoid strong sunset heat]. However, 100% avoidance of climatic affects is not possible, clients do not agree. They say, just put the glass in and the air-conditioning will address the heat". A4

2. Main gates

'Bawabh' the term used to describe the main gate and any attached design feature is often considered when designing a Saudi house. It builds on the first impression of the HD, and as mentioned earlier, luxury is a primary objective. However, the design of the main gate can be disproportionate to the overall size and design of the house.

> "There are people who go around streets taking pictures of palaces' gates wanting similar ones for their tiny houses". A4

> "I saw a house that is very large and luxurious from the inside, but from the outside, it is very plain i.e. with narrow columns and no GRC, and the boundary-wall is plain, with a small gate. No effort has been made to make it look nice at all". H3

Cast iron gates with glass (i.e. for privacy) are the most common in all house forms and sizes. They are relatively affordable for most people, since different quality standards are available. Other metals, wood, and aluminium doors exist but are less common.

The form of the main entrance gates varies, from freestanding gates levelled with the boundary-wall (Figure 4.16 A), which is an emerging design that is perceived as more contemporary and elegant. To other forms involving a door recessed a couple of meters and shaded in some applications (Figure 4.16 B), this form can be found more extensively in older houses. The later form, from the researcher's perspective, is a more practical design to help cool the space for people waiting, or even to cool the door itself to benefit the person opening it.

The majority of houses are fitted with intercom communication and gate opening systems for practicality, this helps avoid the need to exit the vehicle in high temperature conditions. Security is also one of the objectives of gates and the intercom systems.

[A] Freestanding gates

[B] Recessed gates

Figure 4.16 Examples of houses' main gates

(T1) 3.5 Reception Spaces

1. The Majlis

The term ‘majlis’ was used to refer to the men’s reception room until recently. It was the most important and largest space in the house. Today, the connotative meaning of the term shifted to a more abstract meaning. First, the concept of having women’s majlis has emerged in modern Saudi houses, although, they were smaller than the men’s space, and located to the side, whereas men’s majlis was at the front, Figure 4.11 and Figure 4.12.

Gradually, the space for receiving women has extended to the ground floor living room. A number of reasons led to the promotion of this, for instance, the introduction of the first floor family living space led to the ground floor one being less used and offering a better setting to receive guests at most times. In addition, the open design of the ground floor living area made it more attractive than the segregated closed space. Another strong motivator, is the decreasing size of houses, which makes having a separate women’s reception room either impossible or produced a tight clustered layout.

This said, most people today have different gendered guests on different days, so that the men’s reception zone, i.e. including the dining space, will be used regardless of the availability of other spaces. This phenomenon was confirmed by most interviewees and through personal experience. It demonstrates how women are gaining further recognition in the design of their houses’ layouts and reflects their role in contemporary designs.

> “If I do not have men, I receive women in the majlis…the ground floor salah [living space] is for guests or my daughters friends [i.e. younger girls when the older women are in the majlis, this is to offer more space and freedom]”. H2

> “Women guests will sit in the living space overlooking the swimming pool. The younger girls will sit here [i.e. the television seating area] or in their cinema room. Men will be in the majlis. But if there are no men, I will have my friends there [women]”. H3

At events where there are too many people, such as Eid and funerals, extended families will divide people between two houses, usually houses owned by the oldest members of the families. The women and children will be in one house and men and older boys in the other.

2. Estiraha

Large extended families and people who host large events regularly and cannot accommodate all their guests inside their houses, build or rent large detached halls called 'estiraha', the literal English translation of which is 'relaxation', referring to a place where people rest and unwind. These are either within the house's boundaries, e.g. Figure 4.3 or are at locations further away from the city. Some people only rent one for a special occasion (see (T1) 2.1, point: 1Hospitality).

The halls vary in size, condition and facilities, and prices also vary accordingly. The concept of the 'estiraha' started as a recreational area for extended family members to meet. It consisted of a large plot of land located on the outskirts of a city. It has a boundary wall and is a single-storey building, comprising of two large reception spaces, one for men and another for women, toilets for each, and a kitchen. The outdoor space varies in its features, it may be simply covered with grass, making it a football field for the boys, or it may have all or some of the following features; a playground, swimming pool, barbeque area, play/games room, a small farm yard with bird-cages (e.g. chickens, pigeons, and ducks)…etc.

The main idea of the estiraha is to offer an outdoor setting, unless the weather is unsuitable, and then the inside reception spaces will be used. The reception spaces are furnished modestly, mostly with carpets/rugs and floor-level seating, i.e. Arabic seating cushions. People either bring drinks and meals with them to share, or order dinners for special occasions, they may also prepare drinks and meals in the estiraha's kitchen, especially if it is owned by them.

The concept of the estiraha has shifted, being extended to include constructions that are more sophisticated inside and out, and also to be located within specific neighbourhoods. They attract more formal celebrations, e.g. Eid and weddings, for recreational purposes.

3. Dining room/s

The main dining room is always adjacent to the majlis. In most houses, a sliding door separates it from the reception/majlis. Like the majlis, there are two dining rooms, that is so one is available for women guests. However, women's dining is usually a family dining (see Figure 4.11 and Figure 4.12).

Dining rooms were formerly empty spaces for serving meals at ground level. More recently, however, people have adopted use of a dining table (Figure 4.17). Correspondingly, the type

and form of the food served to guests has altered. Smaller portions and more varieties are more common, served in the form of a buffet, which still includes traditional dishes. While in the past, the finest dinner consisted of a roasted whole lamb on a large plate of rice with some side dishes the guests would sit around.

Figure 4.17 Dining rooms in Saudi houses
Source: Al-Naim (2006: 124–25)

(T1) 3.6 Distinctive Saudi house' components

1. Kitchen/s

Having two kitchens is quite common in Saudi households. These are what is professionally known as the dirty kitchen and the clean kitchen, i.e. the cooking/frying kitchen and the internal or open kitchen. The first, as its name indicates, is used for more extensive cooking, i.e. the type of cooking that produces unpleasant smells, e.g. deep-frying. To avoid the spread of these smells into the house, according to house plans, the concept of external kitchens were introduced at the end of the 1970s. The researcher believes that this concept originated in the Philippines, and was transferred to Saudi houses by Filipino architects; however, there was no published evidence found to support this theory.

Whereas, the internal kitchen is located inside the house and is meant for light cooking e.g. drinks, breakfast and sandwiches. In houses designed more recently, the kitchen opens on to the living space, Figure 4.18, while the dirty kitchen is located behind it (i.e. within the main house and not outside, but isolated from other spaces through the clean kitchen) (see Figure 4.11 and Figure 4.12). In this case, the dirty kitchen is called the inner kitchen because it is hidden inside, whereas the clean one is called the open/outer kitchen because it is exposed.

The size of the dirty kitchen is often smaller than the clean one, since it was designed as a supplement. However, nowadays, it is the primary kitchen in use, the clean kitchen is barely used in many homes, and is more of a show kitchen. This phenomenon was not reflected in new housing designs, although the interviewees agreed that it was logical that the dirty kitchen should be larger.

> "The dirty kitchen is supposed to be bigger but it is the opposite. This house has a very small dirty kitchen. It does not feel right, but some people do it proportionally". A11

> "We always keep the dirty kitchen small, while all the major cooking is done in it, so it should be the opposite". D1

> "The kitchen inside is used most… This kitchen [open one] is used when I have guests. I use the counter as buffet and for service, i.e. cutlery and plates". H2

> "I wish I did not have a formal kitchen, I even tell my sisters not to put one in". H3

A further interesting phenomenon found in Saudi houses is the existence of a kitchenette (see Figure 4.11 and Figure 4.12). This is a small kitchen on the first floor, the family uses this when they are sitting in the upstairs living room or late at night when they are at their bedrooms. Although many houses have three kitchens and this is a common request, not all houses have them, this is a lifestyle choice.

> "We also have a small area upstairs if someone wants a light meal". H2

> "On the first floor there is a kitchenette". H1

Figure 4.18 Clean kitchen open to living space (H2)

2. Guests washing area

It is common to have a foyer leading to the guests' toilet that has two or more basins (see Figure 4.19). This is so that guests can wash their hands after a meal, without having to go into the toilet or queue with a large number of other guests.

Figure 4.19 Guests hand-washing area

This zone is dual function, on some occasions as the large mirrors that are provided over the basins are used by female guests (mainly) to check/refresh their makeup and their hair. However, in houses where size is dramatically reducing, as is the receiving of guests, the space still exists but on a smaller scale with only a single basin and another inside the toilet space.

Two factors may have resulted in this phenomenon, although none of these has been confirmed, only suggested. The researcher believes that one motivator is religion, while the other is the progression of a traditional socio-cultural phenomenon. As a Muslim is expected to respect food by not playing with it or throwing it on the floor; for instance, toilets are considered a filthy place, and as people used to eat using their hands, and many still do, they do not wish to wash their hands in the same room as the toilet. Historically, people used to present their guests with a large bowl and a jug of water to wash their hands after a meal. This was dropped with the innovation of the basin in the modern age. As it was a new commodity, people had to choose where to locate it, so it was placed near to the reception area, where people eat their meals, as this is the most convenient location. There may be other reasons for this phenomenon, but further exploration would be required to determine this.

It is worth mentioning that this phenomenon reflects the type and regularity of events carried out in Saudi houses and the type of meals presented also, also stressing the importance of

hospitality (see (T1) 2.1, point: 1Hospitality) and how a person represents him/herself to others through his/her house.

3. Annex apartment

This offers additional accommodation in some houses. It is in the form of a first floor apartment that is part of or at roof level, i.e. the second floor in a house. It either is accessed through the inside of the house, so it is like a large suite, or has a separate external access point. Some people rent it out (if it has separate access), or it may be used by the owner's son (when he gets married). Some properties will have more than one apartment. In the early stages, when the homeowner's son/s is still young, they rent out the apartment for additional income until he is married.

> "I will add a small apartment for my son when he gets married so he can live in it for 5 years. I said to him, when you are away at work, your wife will not be alone worried. It is also to save him some money". A1

> "There are clients that want to design the ground floor for them and the upper for their sons, or the front section for them and two flats at the back for their sons…we separate two rooms and a kitchen upstairs for the owner's son". A6

> "If they [the children] are still young, they consider renting it until they grow up". A9

(T1) 4. Alterations to houses

This section describes phenomena and concepts related to alterations found in contemporary Saudi houses, what they are and how they occurred.

(T1) 4.1 Changing forms, maintained concepts

Most of the alterations found in Saudi HDs affect physical form and the interior design decoration, whereas, socio-cultural concepts remain similar to an extent. The main changes were found in the female reception zone (see (T1) 3.5: Reception Spaces). Not having both genders visiting on the same day helped reform lifestyles and reshape house layouts.

> "Now house layouts are more flexible". A9

> "In the past, there was a men's entrance, a women's entrance, a family entrance, a kitchen entrance ...etc. Today, there is one entrance for male guests and another

> that doubles as a family and female guests' entrance. The women's reception will open onto the family living space, many people even omitted the concept of women's majlis". A10

> "Our previous home was not small, it was big but an old design, you did not feel the area of the house, rooms and rooms and a living room, you walk in and there is a wall in front of you". H2

Whereas, the men's reception zone conserved most of the layout in (perhaps) all houses, that is, in modern house forms. Its components were limited (i.e. a main sitting room, a dining room and a washing and toilet area), this may be the reason why things have not changed much. Gender segregation needs also play an influential role in making it difficult to alter this zone without interfering with the core concept. Nevertheless, having external reception halls may offer an alternative to the conventional concept.

> "The only things that are as they were are the majlis and dining room. In all houses there is a majlis and a dining room and a toilet in between. I wish I could change it, but there is no way. Even if I changed it, maybe a time will come and I will regret it and wish I left it as it was, because this is our customs we cannot change everything. We changed the women's area but the men's remains the same". H3

Nonetheless, socio-cultural rituals in hospitality have not changed significantly, e.g. at dinner gatherings, the host will still serve Arabic coffee with dates on arrival, but nowadays other sweets like chocolate and mini-cakes are added. Then, tea with the addition of some light savoury finger-foods is presented. This is then followed by dinner, then coffee or tea again. Whereas in traditional settings, guests would leave immediately after dinner, after they have washed their hands and the host has offered them some perfume, mostly 'bukhoor' i.e. scented wood lit over coal in a special burner held in the hand and passed to all guests, this practice continues today (Figure 4.20).

Figure 4.20 Different forms and types of contemporary scented-wood burners

This brief example aims to demonstrate the extent of the changes affecting the socio-cultural phenomena in some Saudi houses, It also shows how changes are more materialistic than behavioural, thus, the shape of teacups may have changed as might the type of food, but certain defining aspects remains the same.

(T1) 4.2 Combining functions in a space

In earlier eras, many Saudi families had meals in the living space. The shift in some families' lifestyle into having meals in a dedicated dining space, along with the introduction of a women's dining room has resulted in a space that is shared by the family and female guests (i.e. when the main/men's dining room is not available to female guests).

What is more, the opening of the women's reception onto the living space and the availability of a second living space, i.e. mostly on the first floor, has resulted in a kind of upgrade to the level (that is labelled the ground floor) family living space, since it is used less by the family. As a result, the majority of the ground floor level activities are mostly devoted to guests Figure 4.7.

This phenomenon raised a question with the researcher. That is, since findings showed an increasing interest in the design of the family section (as demonstrated in (T1) 1.1, point: 3 Prioritising the family zone/s) and later, findings also led to a conclusion that families are not using the ground floor very often, which is the area with increased interest. Then, if this

contradiction exists within a house, the first phenomenon will present a mistaken description of the reason behind increased interest in the design of ground floor living space. Therefore, there would be a need for further investigation, involving case studies of people living in housing layouts with an advanced family zone design on the ground floor, to confirm the extent of the accuracy in the phenomenon described.

This said, at present, many houses maintain conventional layouts and lifestyles as each function has a dedicated room/space that does not interfere with other functions.

(T1) 4.3 Post-occupancy alterations

House alterations, whether functionally or structurally, which are carried out after living in a house for a prolonged period come in different forms:

1- Planned future alterations. Such as the plan to divide a space by adding a partition wall when children grow older.

> "Some will say, I want a baby room with double access [i.e. one on the master bedrooms and the second separate] so when he grows we can isolated him from our room". A2

2- Following the developing needs of the family due to changes in their lifestyle or structure, e.g. as a child grows up, he/she may need additional space for certain hobbies/activities or for studying/working, or the owner's parents or one of them may move in.

> "This is now a women's dining room, I rarely use it, it was planned for our grandmother [mother-in-law], but she passed away before we moved in. I would like to have a traditional-style sitting area here". H2

3- Refurbishment/renovations, are carried out to update the layout and/or the design of parts of the house to follow fashion and new trends. Alternatively, renovate the entire house to retain the housing components and its finished status and extend its anticipated age. This is a growing phenomenon, which began as property/land prices amplified over the past few years, this made it too expensive for many people, who were hoping to move to newly built houses of a comparable location, size and building quality.

> "I like my house, but now [after living seven years in the house] I would like to have some new wall painting trends and so..." H2

(T1) 5. Variables for selecting house-location

This point was not investigated thoroughly, as the researcher believed that according to the given criteria its influence on the design process and design conditions was secondary, although it had to be acknowledged as a residential architecture variable.

This said, most Saudi residential locations today are in city/urban contexts and these are areas with more relevance to the topic investigated. Villages on the other hand have different contextual settings and different sets of issues arise accordingly and need to be investigated separately from other studies.

Nonetheless, some variables for selecting the location of residences were identified through the analysis process, these are worth mentioning here as they offer an additional understanding of the context. Many of these reasons are common and similar to the reasons known globally, such as location price range and closeness to work.

The variables that have resulted from this investigation are:

1. Familiarity with a location, mostly through living in it or close to it, or by knowing someone (i.e. especially relatives) who live there.

> "All our relatives live around us, our cousin, the oldest in the family has a majlis for young men and another for older men like my husband; they all gather and meet there". H2

2. Financial drivers, this is related to the value of land/properties in an area and/or the anticipated future values. This can affect the possibility of applying for building or house-buying loans, which can vary according to the location.
3. Proximity to parents' houses and relatives is vital to some people, e.g. V5 stated that

> "The most convenient location was [X], it was between my parents' house and my husband's mother's house… we found a property initially but felt it was too far, so we left it". V5

4. Easy and direct routes to work places, schools/universities and services i.e. shops.
5. When buying from a development, the reasons above apply, but the financial factor is an additional influence, as highlighted by D2 a residential developer and a consultant architect. This in addition to building quality and design features, which are also factors that can affect the location selection decision.

"Financial status is the most important factor when selecting a residence". D2

"There are people that search for quality, and if they find something ready they will buy it". A8

(T1) 6. Traditional architecture today

(T1) 6.1 Perceptions of traditional architecture

The notion that traditional Saudi artefacts and buildings should be treated as part of history and placed in museums occurred on many occasions during and prior to the research process. Many, if not the majority of people, believe that tradition is incompatible with modern lifestyles and contemporary commodity. They simply describe it as 'old stuff'. Many reasons have influenced and led to this behaviour, e.g. rapid leaps into modern living and poor attempts into reclaiming traditional designs in a contemporary approach are two major causes, as explained in further detail in Chapter 2, 2. 13Section 3. Nevertheless, analysing the reasons that have led to this are not the main objective of this research, and this has been argued in other different studies. However, the outcomes of this behaviour have an impact on residential architectural designs today and the socio-cultural phenomena within them.

Interviewees had different interpretations of the concept 'turath' (i.e. the Arabic term for tradition), some provided a connotative or metaphoric meaning, while others gave literal meanings (denotative), or examples of traditional features or artefacts to describe what was meant.

Based on these attempts, it became clear to the researcher that traditional architecture and linked artefacts were symbolic when interpreted in isolation from today's context. In other words, since many traditional concepts are still part of the contemporary Saudi socio-culture and the built environment, using the term 'tradition' represents an attempt towards detaching the past from the present, which explains the conflict found between people's attitudes toward describing the meaning of turath, i.e. either admiration or disfavour or a combination of both.

The points below demonstrate the participants' interpretation of traditional architecture as generated through the investigation and analysis process:

1. A conceptual or visual application of Saudi socio-culture

"Traditional features are either, space concepts or the visual elements. Tradition is a basic in our designs; as a concept. While visually, I am open to all the Islamic productions in architecture". A1

"Traditional architecture goes beyond the image and courtyard… houses used to have narrow alleys forming shades from the buildings being close to each other. People walk and children play in these shades because there was no air-conditioning, privacy was also created through the urban layout". A8

2. Old: i.e. out-of-fashion

"People do not like traditional designs, they say it is old". A10

"Anything traditional means it is going to be busy and packed, I do not like packed things, I like empty things. I like new modern things". H3

3. Meaningless replications as a trend

"Keeping and holding onto old thing is a recent trend". H2

"My sister in law likes traditional Saudi things, and a woman in ARAMCO has a tent full of it". H1

"Traditional architecture should be treated as an identity not as a fashion". A2

4. Does not serve contemporary needs:

"Copying the courtyard as it was, is not beneficial, for instance because of air conditioning". A2

"Some people put stuff under the stairs, I think this is packed and unused items". H3, (Figure 4.21)

5. Should be located in museums

"We try to make clients aware about the Saudi environment and…and…but he will say NO, no this is museum work I want classical, or French". A2

"One has gathered all her old stuff in her living room. If she took a small villa and turned it into a museum, it would have been better". H1

6. Conserve tradition as part of history

"I like old stuff, we have some ancestors in Bahrain, I like it there, they have conserved some of their traditions, and they still exist there". H2

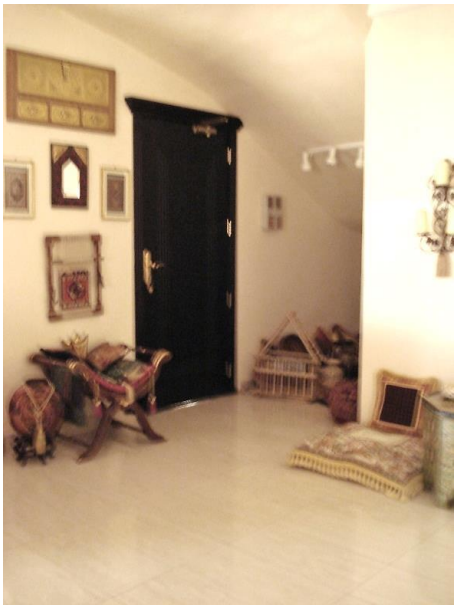


Figure 4.21 A traditional corner under the staircase

7. Needs modernising

> "You wish to bring contemporary items, but there are obstacles. I like traditional wooden shutters, but this requires annual maintenance, so we will have aluminium shutters". H1

> "I would love to have an interior courtyard. I am planning to have something similar in my house, maybe under the staircase and a roof garden". H5

8. Brings out memories i.e. connotative meanings and sentimental value

> "We used to lie down next to the television and we girls slept in the same space…When I see the things I used to have when I were little, I feel nostalgia…When you enter some of the old 'hawary' [neighbourhoods] you find old men sitting on chairs chatting, it entertains me to see such scenes. Like a woman buying bread or beans and carrying them in the street, we miss such things here". H2

> "You cannot bring a person from southern SA and design a traditional Dubai style building for him. He will not feel any sense pf belonging. But if you design it for a person from Alhasa [a Saudi city closer to the Gulf region], he will say 'wow, it reminds me of the past…' There will be an emotional relationship - same with Najdi style". D2

9. Part of a social group identity, D2 comment above reflects this notion.
10. Layers of episodes

> "Dammam's centre is layers of episodes". D2

(T1) 6.2 Recognised traditional features

The courtyard was the most common and immediate feature of the traditional house and it was recognised and recalled by participants during the investigation phase. The researcher believes that this was because the courtyard concept was common to Saudi houses and alterations to it have occurred with the introduction of the villa concept. This change did not only affect the form of houses, but lifestyles and many other socio-cultural phenomena centred around it.

> "Traditional architecture in general follows the courtyard system". A4

Moreover, other elements from traditional architecture were identified, such as, window shutters and screens (i.e. mashrabiya) (A8), arches and arcades (H1), wind towers, a beige colour scheme (A1 and A7), inwards opening (because of the courtyard) A4, socio-cultural phenomena:

> "The men's majlis layout consisted of the wejaq [a fireplace for making coffee with shelves around it for pots], the homeowner used to set there, preparing fresh coffee was a sign of hospitality. Sadr-almajlis [heart of the majlis i.e. the far end of the room facing opposite the entrance] was for the special guest who is served by the owner. Floor coverings quality also differed, high quality woven rugs in the sadr, and bamboo rugs were usually for young boys sitting closer to the door". A1

(T1) 6.3 Continuity and change in traditional features

Aspects of the traditional context took a number of forms in contemporary residential architecture:

1. Continuity in both the physical form and the conceptual and practical function, e.g. dining rooms with floor seating and serving.
2. Continuity in socio-cultural aspects, but changes in form or mechanism, e.g. providing a suite for the homeowner's parents was another shape of extended family living.
3. Continuity of the physical form but with a new conceptual meaning and a new function, e.g. arches and arcades for decoration purposes without a structural need (Figure 4.22).

Figure 4.22 Traditional features for decorative purposes

Theme 2 Empirical Categories in Saudi HD

Residential architecture in Saudi Arabia is bound by official legislation and building regulations. Nonetheless, unwritten norms and phenomena in the actual design and construction processes are as important as those specified in the written regulations. However, these are only known and understood when experiencing this field in context, as no publication that explains these terms can be found. Therefore, the aim of this section is to fill this gap by bringing together the unknown or unstated and building a clearer perspective of HD in SA.

The information/data was gathered through a variety of sources, mainly in interviews with residential architecture stakeholders; e.g. architects and homeowners. This returned a broad range of information about the practices, people involved, projects, processes…etc., information that explains the relationship between these aspects rather than the solitary incidents or cases found in the majority of other architectural related studies.

Nonetheless, the human aspect was not overlooked or disregarded during discussion of the findings in this section, in contrast, it was treated as fundamental to both the investigation and the discussion process. There was a need to accumulate a deeper and more representative explanation and interpretation of the true phenomena of HD in SA.

Accordingly, the following pages demonstrate the second theme in the research's findings. Eleven categories were identified, and the discussion starts with those categories describing the organisation and practice settings as viewed through the field study. Then, categories explaining the practical process in residential architectural design are discussed, again based on the field study findings. These categories are listed below, and others supporting HD categories are demonstrated after this theme (under Section 4. 3, p. 248):

(T2) 1 Organising the practice;

(T2) 2 Inside the architectural-practice;

(T2) 3 Residential architecture general criteria;

(T2) 4 Approaching a new project;

(T2) 5 Communication methods, tools, and issues;

(T2) 6 The conceptual design;

(T2) 7 Design resources;

(T2) 8 Concepts and styles in designing houses;

(T2) 9 Impediments (issues) facing the development of HD practices;

(T2) 10 Future improvements and suggested solutions; and

(T2) 11 House design future.

(T2) 1. Organising the practice

A number of sectors are involved in residential architecture in SA, but three stand out as key bodies responsible for its organisation and development. These bodies are: 1) Municipalities; 2) the Saudi Council of Engineers (SCE); and 3) architectural offices.

The general description of these three sectors and the roles they play was presented earlier (in Chapter 2: section 2. 18). However, the field investigation, through interviewing key members in these locations has contributed further to explaining certain phenomena in residential architecture. Moreover, it has provided additional information about the unwritten and/or the unspoken subjects that are usually practiced subconsciously as part of a larger system (see section 2. 18).

The data has shown how organising bodies relate to and are linked with each other, and what issues develop as a result of this, consequently, a new perspective is presented. The interviews also revealed some of the changes in the system that can be expected to take place in the near future and how these have been perceived, as will be discussed in the following sections.

(T2) 1.1 Municipalities

Municipalities have the most visible role to play in the process of residential architecture; however, other sectors, such as the SCE and Neighbourhood Committees[25], can influence decisions, especially in regard to building regulations.

> "We [SCE] try to develop regulations and provide studies and advice to the decision-makers". G1

[25] Neighbourhood committees are arranged and managed by Municipalities; members are elected from the same neighbourhood and are expected to represent their area in their Municipality branch.

During interviews, both, professionals and members of the general public blamed the municipality for building issues as it was the primary organising body.

> "There needs to be careful inspections and punishments to avoid breaches in building regulations, the municipalities are responsible for this, they need to be stronger in this area". G1

Conversely, the municipality defended their position in many ways, such as the diverse and huge amount of responsibilities they carried out aside from architectural tasks e.g.:

> "The municipality is also responsible for other activities related to health and safety, such as food inspections at restaurants, and all commercial shops, plus streets cleanliness and rubbish disposal. It is also responsible for the communal spaces, such as parks and beaches, we provide planting and cervices, and maintain all the facilities at those places". G2

Additionally, the low number of employees in comparison with the amount of work they have and the limitations in specialised qualifications affects performance levels.

> "The issue is we cannot cover all this with the staff we have. The same staff is responsible for neighbourhoods' cleanliness, shop signs, restaurants health issues...etc. Therefore, if he finds a violation in a house, he may knock on a door and no one will answer, or a woman will answer and say her husband is not there, they may even get into an argument...etc. Unless there is a breach affecting the neighbour or others, in this case he will take formal procedures and go to the police". G2

> "We [Eastern Dammam Branch] issue a monthly average of 130-150 permissions". G2

Nevertheless, they do believe that a lot of progress is made and they do work towards people's benefits and the development of the practice, but it can be difficult to see these developments when examining the rapid changes in the field in a general way.

Another comment, mentioned by G2, was that some people submitted poor designs, and when the municipality comments on them (i.e. rejects them), they get upset.

> "When people view the building later on, they say 'why did the municipality allow this!' so we have to interfere sometimes regarding the design of buildings elevations". G2

This, however, may indicate lack of clarity in building standards' regulations, since judging the quality of a design should be done against clear parameters, using a standard process, so that also all individuals recognise they are being treated equally and fairly.

Field observation and discussions with municipality representatives (G2) have showed that a municipality can be tolerant against construction breaches especially in the case of houses Figure 4.23.

> "We require the building to have insulation, but many developments don't apply this… we do not interfere a lot with houses in the middle of neighbourhoods as long, as they do not use strong bright colours". G2

Figure 4.23 Overlooked breach of building regulations, using bright colours for an elevation

Recently, an electronic system has been introduced. This system allows people to apply for permissions through architectural offices (rather than having to visit the municipality branch), offices logon to the municipality website and complete procedures electronically. In this way, according to G2, a faster and more standard service is offered. Nevertheless, permits from other suppliers, e.g. the electricity company, still needs approaching by the individual or his representatives.

(T2) 1.2 The SCE

The duties of the SCE are published on their website and briefly described in Chapter 2: section 2. 18, they were also confirmed during the researcher's investigation. In brief, their role centres on organising the structure of engineering/architectural practice, through maintaining the reliability of offices and employees, as well as engineering practices within the public sector; i.e. governmental institutions.

Although the SCE may not have a direct power to change regulations or introduce new laws, they have a strong and direct influence on decision makers at higher levels. They are encouraged by the government and many engineers, i.e. including architects, support their work, nonetheless, some architects believed they have not done enough to develop the field.

Although the SCE has no direct responsibilities towards the public, they work to protect them and bring awareness of their knowledge:

> "Our society needs to be more aware about architectural practice… the 10th SCE-strategy is about cooperating with society…Our role is to educate them about the engineering profession…We gave many lectures, courses, and produced brochures for the public… we try to protect citizens". G1

Other data generated through the interviews, includes the findings stated below:

1. The SCE works on developing a building code and suggests developments to existing building regulations by providing studies and advice to decision makers.
2. G1 believes that the council, as part of its duties, ought to

> "Intensify discussions and seminars about the building code" G1.

3. One of the rights architecture clients has, and which they are mostly not aware of and not made aware of, is the right to ask if an office and its employees are accredited by the council. This act is highly encouraged and welcomed by the SCE. If this was applied regularly, it may help avoid the many problems resulting from projects performed by unqualified members/offices.
4. A disappointing finding facing the researcher, and others such as Al-Mohaimeed (2009), is the lack of a clear updated list/database of all engineering offices regulated by the council. The interviewees agreed to this and replied:

> "I wish we could have a database". G1

5. He justified its absence on being busy with new management tools, which they have presenting and working on in the past six months. This said, the absence of updated office data is not a complicated procedure when compared to the great value it could provide for both clients and professionals. It will also encourage further research studies and enable surveys, to help develop the profession.
6. The council has recently (i.e. in 2010) introduced a new system linking non-Saudi members with their residency permits, i.e. the 'Iqamah' system organised by the Ministry Of Interior Affairs. In order for an engineer to renew a stay permit, he needs to be registered and accredited by the SCE. Accreditation means proof of qualifications is presented to the council. According to G1 and other published media e.g. (ArabNews 2013), this system has exposed thousands of fraudulent certifications, since the majority of employees are of non-Saudi nationality and have to pass through this process. It has also exposed mainly people who

claimed to have qualifications they did not, most of whom were craftsmen with engineering permits. As a result, offenders had to either amend their job-title on their permit-to-stay, to adhere to the truth and report only verifiable qualifications; or were refused an extension and had to return to their countries, even though some of them had been working for tens of years in SA. During the interview, G1 stated that seven offices were closed because of the new system (for further details, see the Arab News' article in Appendix 4).

7. The SCE does not have direct contact/relations with clients or developers besides the information they offer them in terms of offices and engineers' licenses/accreditations, and when they are part of the ruling governorship in lawsuits.

8. The SCE is active in presenting new developments to the engineering field, architecture in particular. One of the developments they applied was compulsory project insurance, which was mainly for large projects, and optional insurance for engineers.

9. Another new organisational system they are planning to introduce is for accrediting the planning of new sites, e.g. sites that are developed to create residential neighbourhoods. The new system will require authorisation from the council before they submit it to the Municipality for permissions.

(T2) 1.3 Architectural offices

The link between those offices practicing architecture and the organising bodies was found to be relatively limited and restricted to official tasks, such as, obtaining permits or obtaining updates of building regulations.

This relationship did not help in the development of the field, as every sector worked in a somehow isolated manner. In other words, no direct or regulated discussions about regulations or the impact of new laws were discussed in formal organised meetings with practitioners. Although some cross-institutional meetings were conducted occasionally, this can hardly count as beneficial. Consequently, subjects discussed by decision makers, primarily in municipalities' board meetings, were based on their own visions and conclusions or informal conversations with architects with access to key members. A10 gives an example that exemplifies this lack of communication:

> "The driver's room in a house is already detached from the main building, the municipality is now requiring that his room open on the inside of the house's boundary-wall [not have direct access to the street] in order to gain planning permission. We cannot understand the point behind this; so people implement this then after connecting electricity [i.e. all permissions were gained], they open an external door". A10

Although the SCE acts as a mediator between offices and decision makers, more regular communications with practicing members should be introduced to strengthen the relations between stakeholders, and consequently evaluate circumstances and problems consistently.

> "We [the SCE] had meetings between the municipality and offices, it solved many problems". G1

In recent years the SCE have arranged informal gatherings for specific occasions like Eid celebrations. This served to enhance communications; however, it is not formal, so no minutes are produced and no specific points/issues are prepared for discussion.

Architectural offices aim to have good relations with the organising sector; therefore, they avoid imposing their demands. On the other hand, these offices also act as businesses, they seek profits and express interest in gaining the public's appreciation through their services. This is what they spend their main efforts doing when working towards the wider spectrum, i.e. organising the architectural field is not perceived as their duty even if they have concerns and care about it.

> "I have a role towards my client and likewise towards my society". A8

Part of the process involving sharing responsibilities, involves accredited engineering offices being given new tasks, and building permits being issued through offices instead of municipalities, accordingly, offices will be responsible if any design layout breaches the regulations, as they are responsible for the structural designs. This will help simplify the process, and such offices should be better able to evaluate the quality of designs through use of expert approaches, since municipalities often rely on limited engineering qualifications and make a large volume of requests, making it difficult for them sometimes to spot problems. The new process originated in just a few regions, but is expected to spread out into remaining areas.

(T2) 2. Inside the architectural-practice

The general description of architectural offices was presented in Chapter 2; however, field investigation supported some of the information found in the literature and revealed additional information about the practice. The investigation showed how architects themselves view the practice in general and how they describe and understand the work practices in their own offices.

(T2) 2.1 Project types and fees

Most architectural offices (including offices visited) focus on residential projects, as these exemplify the vast majority of buildings constructed in the country. Privately built houses, i.e. villas built by individuals for their own use, were the most common type. While this remains the case at the moment, observation showed a rapid spread in residential development projects of various sizes and types, i.e. detached houses, semidetached, and apartments. Professionals in the field have also supported this notion, some believing that residential developments offer a future for residential projects in the region, providing more affordable living and offering higher specifications.

> "I believe that the smart decision today is to buy from a developer. Especially for low-to-medium income people who represent 70-80% of house seekers, as they are not able to afford the specifications a developer can provide… in five years' time I think the majority of houses will be produced by developers, because they are easier and more affordable". A8

A smaller number of architectural offices have international support/back-up branches or cooperation and charge relatively higher fees, e.g. A3, A5 and A8, prioritising large projects such as governmental and large companies projects, whereas some are delivered through tenders. Examples of such projects include hotels, schools, factories, housing complexes and office buildings. Nevertheless, they also favour residential development projects since they fall into the commercial category. Part of the move in this direction is driven by the recognition that professional and organisational processes are easier to resolve with such projects than with privately built houses. The later, consume a lot of time and effort and one large organisation based project can be more rewarding than tens of private house projects put together, in terms of production time, negotiations, design efforts and profit.

> "Private villas are a headache, whereas developers come with a time-limit and a strict deadline, e.g. you have 6 months to finish….the advantages is that the client i.e. developers, are aware and knowledgeable about what they want, and don't do anything until they have made a feasibility study and know the program i.e. room specifications. They know more than me about some details that will market the project and add value to the villa". A3

In contrast, there are interior design offices that are growing and developing around the country. These offices mainly carry out interior design projects, which include finishing selections and furnishing. Furthermore, they take on layout designs for houses, which are either done by interior architects then handed to partner architectural offices for structural work, e.g. A10, or some offices employ architects within their structure but still cooperate with other architectural

offices for delivery of structural drawings and other technical works, like electrical design e.g. A11 and A12.

A note to add here, is that many architectural offices provide additional services aside from designing buildings. However, not everyone is aware of these services or how to employ them, e.g. surveying buildings for evaluating the structural condition for people considering buying an existing building/house (revealed by G1).

The cost of designing residential projects, varies dramatically between offices. Within the investigation, it was found that the cost of designing an average size house could range from between 3,000 SR in high capacity offices, i.e. produce about 30 projects/month (A6), and 100, 000+ SR i.e. the minimum charge by A2. Methods used for estimating the cost of a project also varied, whilst some had standard fees depending on the projects' type and size, e.g. A6, others calculated it as a percentage of the project's construction cost and/or the man-hour spent on the design. For instance, A8 charged around 3% of the estimated construction costs in addition to considering the time spent on the design. Whereas A9 charges mainly according to time spent on the design. A number of the offices investigated set a minimum-charge, e.g. A7 (35,000 SR), A1 (75,000 SR), and some have a cost range and work within it, e.g. A4 (20,000-60,000 SR) for a villa package.

Most offices interviewed ask for down payments prior to starting a project, however, the amount differs between offices. Some offices suggest a fixed down payment, e.g. A6 asks for as little as 500 SR, while others charge a percentage of the overall cost. The total remaining cost is then distributed along the different stages of the projects (i.e. conceptual stage, design development stage, and details). The majority of the fee is then paid before going through the building permit process, as it will be difficult to amend the design afterwards, so both the architect and the client need to be assured that final design decisions can be made.

The reason behind asking for down payments is to secure the project, another one is in case a client decides to withdraw from a project then the office will not have wasted their time for nothing. Additionally, as some offices did not ask for down payments until the conceptual drawings were agreed on, the clients could take advantage of them. That is, after completing the conceptual design at a high standard office, they would take it to a cheaper office to complete the remainder of the project; i.e. the working drawings, permissions…etc. Clients mainly did this to reduce the design costs, since the later office will not have to service with the main design process.

Offices may be classified according to their fee levels, since fee provides an indication of the work and service quality. The researcher clearly noticed that offices charging higher fees reflected a greater understanding of their clients' needs, this showed through the type of conversations/communication they had with them and the time they spend in discussion. Moreover, fees also reflect the man-hours spent on the project package and the level of the design outcome.

> "Offices that respect 'architecture' sit with the client and listen to him". A4

> "We always have good relationships with our clients, because homes are a sensitive thing and in order for me to start a design, I have to have a good relation with the owner". A8

In terms of projects with very low fees, the researcher discussed the subject with G1 thoroughly, he and the other informants revealed some key facts about this issue during the investigation. Findings showed that professionals from the field have raised concerns about low charges in formal meetings and on social media sites, as they believe that some offices are not charging enough, and that this is impacting negatively on the profession. This also has an impact on production and architects' wages as well (discussed further in section (T2) 2.2), other matters related to overall perception of architecture are also affected. Low fees at offices are blamed for this, while some architects believe they are operating on an open market and everyone (offices and clients) has the right to choose, others think that ordinary people are unaware of the poor quality cheap offices offer them and the impact of this on their projects/future homes.

However, different project types require different approaches. A number of the architects interviewed, e.g. A4 and A6, confirmed that projects designed as an investment especially apartment buildings were the quickest to complete. This was due to the clear objectives set by investors, who focus on maximising the number of apartments and rooms in the buildings. When engaged on such projects, some architects are content to copy previous designs and maybe just slightly adjust the elevations to differ them (Figure 4.24).

Figure 4.24 Investment apartment buildings

The ‘copy-paste’ concept is widely acknowledged and debated among architects. They criticise it, suggesting it is not what architecture should be about. The majority of very cheap offices repeat designs from existing projects and the architect’s primary task is to attain permits. This approach is blamed for the production of low quality designs and substandard architecture.

> “In projects that are between 3,000-5,000 SR, they sit with the client and see what is he looking for, he says like X’s house or has this and that, so they go and get the plans they have and copy-paste” A4.

(T2) 2.2 Architectural offices’ staff

The majority of staff working in architectural offices are not Saudis. In some offices, the only Saudi is the office’s owner/manager. Some are completely run by non-Saudis, mainly individuals with different Arabian nationalities, e.g. Egyptian and Sudanese. The remainder of the staff may be from anywhere, e.g. India and the Philippines, they usually work as drafters handling management/financial jobs.

> “Many offices from different levels are relying on foreign architects who run the work and give owners a percentage of the income”. A4

The main reason for employing Arabian architects is to enable verbal communication between clients who manly speak Arabic, as they can describe their needs better using their mother tongue. A1 believes that non-Saudis can enhance design outcomes, whereas A2 admits to facing difficulties explaining cultural requirements to his employees:

> “There may be benefits from not being from the same culture, a foreigner for instance will deal with his ideas out of the box, he does not have his ideas soaked in his mind and then design based on them automatically”. A1

> "It has taken some time for workers to understand the Saudi style, and every project starts from zero again". A2

> "He [the Saudi architect/owner] understands local people's needs more than us [non-Saudi architects]". A7

On the other hand, Saudi architects may prefer to either own their own offices, or take a governmental job or a job with one of the few large industrial companies based in the major cities. The reason behind this is mainly financial, as private architectural offices pay relatively low wages. It is also more beneficial to owners to employ foreign architects, who, unlike Saudis demand less salaries and commit to long-term contracts. This is because Saudi workers may leave at any point, especially when a better opportunity is offered to them, this can have a negative impact on those offices employing them. However, it must be noted that new architecture graduates often accept work at lower wages to obtain the experience necessary to be able to open their own offices or secure a better job.

In regard to office size, i.e. according to number of employees, there was no relationship between this and the project volume. That is, offices of a similar size would vary dramatically in terms of the number of projects they engage in and quality levels.

> "I work up to eight projects a time [on her own]". A10

(T2) 3. Residential architecture general criteria

(T2) 3.1 The plot

To build a house, a person must choose a plot that suits his/her requirements and finances. The size of the average plot used for individual house constructions varies between 400-1500$m^{2,}$ according to field observations and the interview participants.

When land is developed for residential use, the minimum area for plots within the developed land, must be no less than 400m^2, in reality, plots with this minimum size (400m^2) are rare in newly developed areas, the most common size are in the region of 750m^2 (see Figure 4.25 for a general idea about forms of land developments). However, because of the dramatic increase in land prices, many people can no longer afford standard sizes. Consequently, the only way to get a smaller size than average plot is to buy a large one and divide it into smaller plots, then sell

the other parts, or to purchase a pre-constructed house that has been divided by a developer[26] (see (T1) 1.1, point: 2 To build or to buy, p. 132).

Figure 4.25 Two different examples of the planning/distribution of plots in two newly developed neighbourhoods

[26] Regulations regarding the division of plots vary slightly between Saudi regions. In the Eastern Province, the length of the plot frontage, i.e. the side facing the street, for each divided part must be no less than 20m in order for it to be granted approval and separate ownership deeds.

The frontage may be as short as 12 meters; but in this case, there has to be dividable properties already constructed on the plot. The owner is required to finish the majority of the build, i.e. finishes are not necessary, before being granted approval for dividing the plot/properties ownership. Therefore, developers, unlike individuals with limited finances, are most likely able to afford this process. As a result, individuals find it more financially practical to buy a smaller property that has completely or partially been built by developers.

(T2) 3.2 Houses' sizes, forms, types and layouts

1. Size

House sizes varied in the investigation between small semi-detached houses that are around 250m^2 spread over two levels and larger houses around 1000m^2. Anything above this size was considered to exceed the common size for individual houses and accordingly falls into a different category with different characteristics and considerations.

> "This is an above average size, the land is about 3000m^2 (five plots), and the built area is about 1000m^2". A2

> "Larger houses meet different conditions, and have complete components". A2

> "An average villa ranges from a duplex size to maximum 600m^2 of built area". A10

Outbuildings and roof-extensions may add dramatically to the overall built area. This is especially the case following the increase in roof extensions allowance from 30% to up to 50% of the roof's total area (see (T1) 3.6, point: 3 Annex apartment, p. 175, and (T2) 3.3, p. 206).

2. Residential buildings forms

Although conceptually most Saudi houses are quite similar, the forms these concepts take vary. Form here refers to house shape. The investigation uncovered a number of forms, most of which are quite common. U-shape, irregular, boxy and stepped are examples of the house forms of many Saudi houses Figure 4.26.

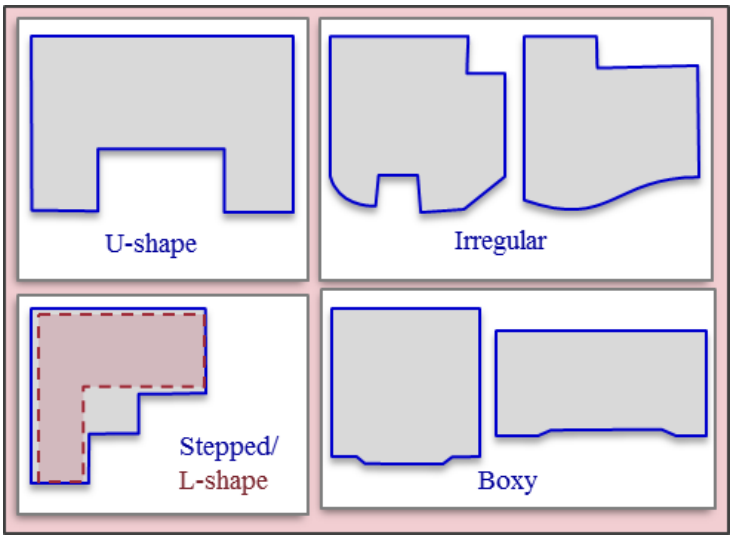


Figure 4.26 Identified house forms

A2 believes that the U-shape form offers "a modern interpretation of the old [courtyard] architecture" e.g. Figure 4.42.

> "Some talk about their privacy from adjacent houses, for example in a villa project that was facing on two opposite streets, we made a nice design, but the client said I want my home designed inwards, I do not want to see or be overlooked by my neighbours. So we designed him a U-shape layout with a garden in the middle". A2

This is a less common form as it occupies a larger space than average and requires a plot with a wide frontage, whereas the majority of plots in SA are deep, i.e. with shorter dimensions to the front.

Step-form houses, on the contrary, are widely adopted in Saudi Arabia, Figure 4.27 and Figure 4.28 demonstrate examples of this form, Figure 4.11 and Figure 4.12 presented earlier in this chapter, also reflect a similar form. In these, the layout usually consists of three zones, each one forming a corner to the exterior front elevation creating a step-form façade.

The portion closest to the front i.e. the first step, is the men's/main reception, while the farthest is the women's reception, in between is the corner for the living room, which will usually have large windows and possibly a double height ceiling. Smaller steps may be created for entrance foyers. This form/layout allows good usage of space in and outside the building; it provides maximum views toward the front of the house, which is often the best and preferred side. The design also provides a good layout, in terms of space organisation and access between spaces. Finally, it looks more appealing to people.

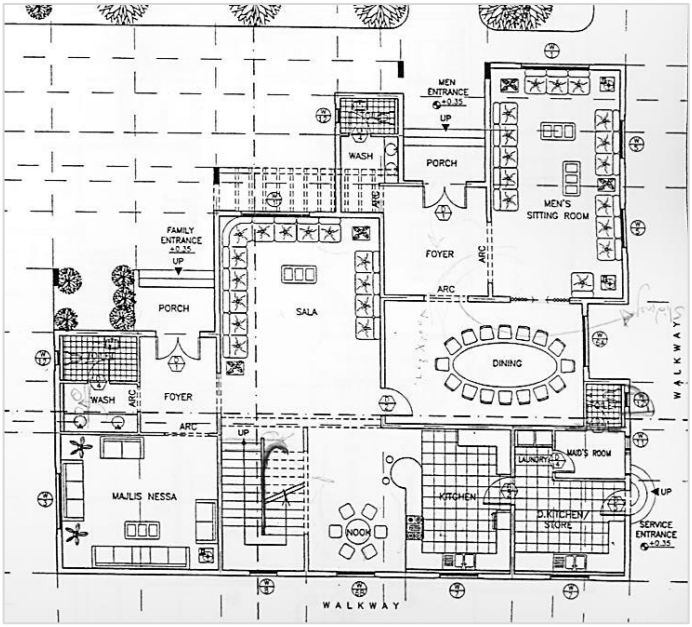


Figure 4.27 Step-form HD

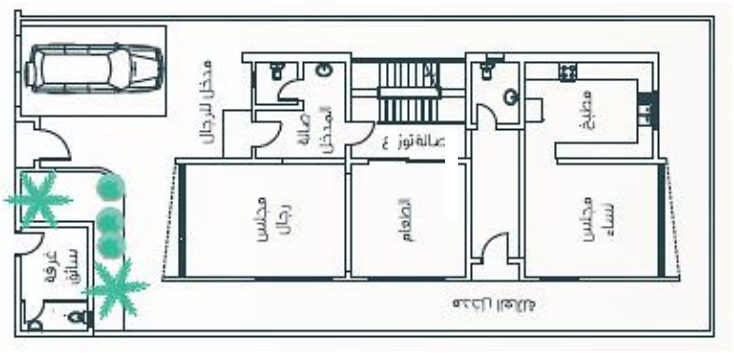
Figure 4.28 Step-form houses

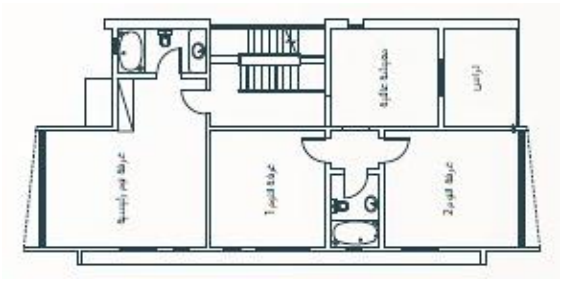
On the other hand, boxy, which is often used as synonymous with flat frontages may refer either to a plain elevation design, or to flat elevations that reflect classical designs (Figure 4.29).

In the plans, if the HD is contained within a square form, some people refer to the building as a box in a critical manner, which explains the majority of homeowners' preference for stepped or irregular forms. One reason behind this phenomenon is that people cannot envisage how the design will look in reality, and understand that it can be visually appealing. Another reason may be an imitation of the norm in HDs, and following cultural viewpoints and trends in regards to house forms. This said, none of these justifications could be confirmed as definite.

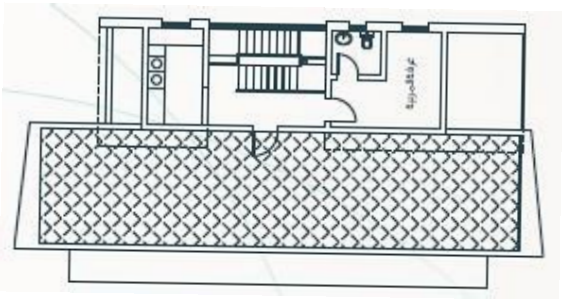
Figure 4.29 Box/square form houses with different designs

Last but not least, irregular forms take many shapes in a modern style house. If elevations are to be considered, these are usually of an irregular form, although the straight simple lines allow them to be classified as boxy or stepped formed houses, e.g. Figure 4.30. Figure 4.31 shows examples of more complex irregular forms.





1st floor



2nd floor/roof annex

Figure 4.30 Modern-style development with irregular forms (D2) (H5)
Source: Tamkean 2011

Finishes and roof types also have an impact on the appearance and realisation of the houses' forms (Figure 4.31). Most houses either have a paint on plaster finish or stone cladding, a few use other materials such as brick or marble cladding. Paint differs in its colour and texture, though generally white or beige degrees are used, as this is a municipality regulation; however,

some houses do not apply this and owners select different colour variations. Figures within this chapter provide a clear demonstration of this.

Figure 4.31 Irregular-form house designs

Roofs, on the other hand, are either levelled in the form of full-size terraces that are paved with outdoor tiles or poured concrete. They are barely used by occupiers due to external weather conditions but may be used for air-drying clothes. The other form of roofing is tilted/sloped tiled roofs but with small levelled areas for placing water reservoirs and the external parts of the air-conditioning system, as applicable.

3. Residential buildings types

In terms of residential building types, the following types emerged in the course of the investigation:

1. Villa: mostly mentioned when discussing HDs;
2. Family complexes, e.g. H4s family complex (Figure 4.3);
3. Apartments and duplex apartments i.e. two storey apartments;

4. Semi-detached houses;

5. Duplexes: any small prototyped house is usually called a duplex even if it is in the shape of a villa;

6. Apartment buildings (3/4 storeys or less), often used as an investment or for an extended family group (e.g. Figure 4.24); and

7. Prototype developments: houses/villas/duplexes.

4. Interior layout forms

Open-plan or a closed layout have been used to describe the form of houses' internal layouts. A closed layout plan referred to a clustered distribution of contained four walled rooms accessed through a lockable door off corridors or small foyers (e.g. Figure 4.32). The socio-cultural phenomena relating to this criterion was explained earlier in section (T1) 2.1, point: 4 Segregation.

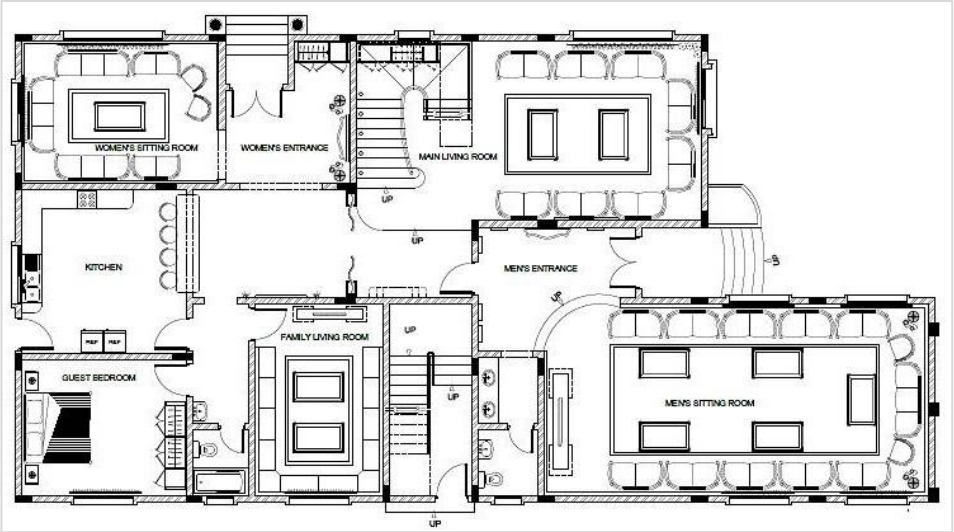


Figure 4.32 A closed/clustered house layout design (H7)

Nevertheless, some participants described the form of house layout in relation to certain focal points, such as large statement staircases or indoor swimming pools.

> "We have three types of layouts in a standard size house: 1- Completely segregated, i.e. both the male and the female receptions are separated from the family area. 2- Only segregating the male reception area, while the family and female reception are open. 3- A completely open design, in these cases they often have an exterior separated reception for male guests". A7

> "All our guests say it is nice and not a common layout, the [indoor] swimming pool is the unique part, as you see it once you enter which differs from outdoor swimming pools". H3

In terms of open-plan layouts, houses that have a completely open layout are unusual examples and viewed as atypical by architects.

> "In my office, when I have a new architect, I explain to him how our designs are; because our clients do not accept open layouts at all… Only once I had a completely open design, the owner's mother was Syrian". A6

> "In completely open designs, they often have an exterior separated reception for male guests". A7

Generally, when a house is described as open-plan only certain spaces are opened, these are considered to be part of the family zone. These spaces are, the living room (salah), the clean kitchen and the family dining room, and in some cases the women's reception space (see Figure 4.11 and Figure 4.12).

> "We separate guests, but open the family area". A2

Nevertheless, in some layouts, although the spaces are opened, they have sliding doors in-between to offer different layouts when needed, especially in developments and smaller houses where spaces are limited in size and/or number, e.g. with one dining room, Figure 4.33.

> "The element that differs most between people is privacy. We say to developers, provide a possibility for adding a sliding door, and if the buyer wants to add one he can". A3

> "I tried to make the design flexible, allowing the client to open or separate spaces". A9

> "Developers prefer open designs so that they do not feel the compactness of the space". A3

Figure 4.33 Flexible open-plan layout in a development house (D2)
Source: Tamkean 2011

(T2) 3.3 Houses spatial components

The majority of houses in SA are built as two storeys and some include an additional roof extension/annex; however, there are few scattered single storey houses. In these, there are some main components which most if not all houses have. Nevertheless, some houses have other spaces/components that they add according to their individual preferences and lifestyles. Table 4-1 below combines all the components of Saudi houses, which were identified through the data analysis process:

Table 4-1 Saudi house components

Category	Space/component	Note	Related pages
Guest reception spaces	Majlis (men/main reception)	Located off the front entrance foyer and faces the main street.	169
	Women's majlis	Comes next in status after the men's majlis. Can be open to the family living space.	169 177
	Dining room	Adjacent to the men's majlis. Accessed through the same foyer or through the majlis directly. Usually with direct/easy access to the kitchen.	170
	Women's dining room	Near the women's majlis and the kitchen. May be used as a family dining.	170 177
	Detached reception hall	Located to the front setback of the house to allow guests direct access from the main fence. Often found in family complexes or large extended-family houses, it will have its own washing and toilet area. It may vary in size and the quality of finish.	148 169 243 (figure)
Family living space	Ground floor living room	If this is the only family space, it will have television seating and main meals may also be consumed there. The location is usually centralised between the men's and the women's receptions, with an open view to the stairs in conventional closed layouts.	133 177
	1st floor living space	Although a common phenomenon, not all houses use them frequently or have them. In some, they act as the main daily family living space.	177 161 162
	Family dining space	In or next to the kitchen, it may also function as the women's dining area. Some will use the living space even if there is a dedicated dining room.	170 177
	Entertainment spaces	e.g. games room (commonly: playing cards and console games), cinema room, indoor swimming pool. The molhaq may be used as an entertainment room for the males.	Figure 4.34, p.209 235 (figure)
Bedrooms	Master bedroom	Usually located above the men's reception zone. May be one large open space or divided into smaller clusters. It consists of some or all of the following: bed space, bathroom, Jacuzzi, sitting space (with television), breakfast area, dressing space/walk-in closet, exercise equipment space, office space, baby-room… etc.	161 162 235
	Children bedrooms	Occupies the remainder of the 1st floor. Either they are en-suite or every two adjacent rooms share a bathroom. Girls' rooms are preferably nearer to the master. To design two rooms for girls and two rooms for boys is a common approach.	161 162
	Parent/s' bedroom/suite	This can be an occasional room for visiting parents or a permanent one. It may be next to other bedrooms, but some will have it on the ground floor, which may also be used by	151

Category	Space/component	Note	Related pages
		other guests.	
	Guests bedroom/suite	Often on the ground floor near the family/women' guests entrance. It will usually have an adjacent bathroom. Some houses may have dedicated rooms for regular guests, e.g. mother or married daughter/s. In other scenarios, guest spaces will be considered with the bedrooms, i.e. similar to or within children's bedrooms.	151
Supportive spaces	Entrance halls/foyers	At least two main entrance foyers are in-place, one in the main reception and the other in the women's/family entrance. A third one may exist for the family exclusively, or for service staff, i.e. near the kitchen zone. The functions allocated vary, e.g. jacket and abaya closet, shoe space, small sitting/waiting space and mirror space. This can be a contained space, i.e. surrounded with walls and doors/arched entrance, or rooms may open directly to it.	Plans: 161 199 204 205
	Roof annex	Can be up to 50% of the roof's area. Usually will incorporate the housekeeper's room and toilet. Other functions may be: laundry and ironing, storage, or an apartment to rent or for married son/s.	175 4-125
	Molhaq (external sitting room)	A detached room is usually used by males as an informal reception, especially older sons and their friends. It is located at the front and shares a wall or a corner from the boundary-wall. It has its own toilet. The size and status of this varies depending on function/s.	Plans: 173 235
	Basement	Only a small fraction of houses have basements due to the high construction costs. Basements vary in size, function, and status[27]. Some have a swimming pool and/or an open garden space. An emerging trend is to have the driver's room on that level.	
	Home-office	Can be part of the master bedroom or any other room, and it can have a dedicated room on any floor. It can have a library within, or a library/book shelves may be located elsewhere.	161
	Servant room/s	In contemporary houses, the housekeeper's room is usually found in the roof annex with a toilet and shower next to it. They may have separate staircases. The driver's room and toilet-shower are detached buildings at the front of the house sharing the boundary wall and may be accessed from the street or the setback.	138 146 202 (roof plan)
	Car garage/ secure parking	An electrical (rolling) door opens through the boundary wall into a paved area in the front (and side) setback. It can be an open space without boundaries to the house but mostly shaded, or it can be contained in a room-like space with a door to the setback. Some will have access to the driver's room.	Examples: 146 (figure) 173 (plan)
Utility spaces	Kitchen/s	One main kitchen, and other supporting kitchens/kitchenettes may be found. Usually this will have a storage space/room off it and a door to the exterior for	171 235(figure)

[27] Another phenomenon when using basements is to store bulky rarely used items like furniture. The researcher noticed on a number of occasions that the basements that were designed with very low natural lighting levels and were not integrated in the overall house layout design; and so would end up unused consequently becoming deserted or used for storage. Jokingly, a colleague once said that their basement, which was designed as a sitting space, must be haunted, as they never go down to it.

Category	Space/component	Note	Related pages
		service. Kitchens are mostly positioned at the rear of the house, i.e. in a less interesting location.	
	Hand-washing space	In guests zones there is an open space off the entrance foyers or next to the dining room/s and it leads to a toilet. Family toilets (i.e. not bedrooms' toilets) may have the same concept but on a smaller scale and lower quality or may only have a standard toilet design.	173
	Storage/s	Vary in size and type, from large rooms to scattered closets and cupboard. Kitchen storage areas are essential[28], other household storage may be in a dedicated storeroom or distributed around different rooms. A storage/closet space for women's abayas[29] has become common in recent houses, whereas only hanging pegs/stands are found near the women's/family entrance in older house layouts.	161
	Laundry room	Can be next to the kitchen or on the bedrooms level near the service stair shaft, but often found next to the housekeeper's room on the roof annex with a nearby space for ironing.	202 (roof plan). 235 (1st floor plan).
Staircase/s and lift	Central staircases	The main stairs in the house are treated as focal points and deliver special attention. In recent houses, when adequate space is available, they only extend from the ground floor to the first floor as another set are placed elsewhere to access the roof level. The basement on the other hand can be reached through either the main stairs or a separate set (from in or out) depending on the basement's function.	Figure 4.35, p.210
	Service/obscured staircase/s	Where space allows, the house will have a separate staircase shaft, accessible through a doorway between the first floor and roof level. This is usually the case with a basic design i.e. one that is less luxurious than the main one. It is mainly used by housekeepers. Other forms of service staircases may extend from ground level to the roof through an enclosed shaft, whether from inside the house (through the kitchen) or from the exterior setback. The latter is used by maintenance people to access equipment on the roof or for annex apartments.	146 173 (plan)
	lift	Lifts are becoming more common and the cost is acceptable to homeowners, unlike in the past. They are often located near the main staircase or a place that is adequate for the family's use; i.e. not meant for guests.	173 (plan). Figure 4.35: (H2), p.210. 235 (plan).

[28] Storage areas linked to kitchens are used for storing goods, e.g. rice and canned food, cleaning equipment and material, and additional kitchen utensils that are used occasionally or/and are too large to keep in kitchen cupboards, they are mostly maintained in their original boxes such as juice or meat processors.

[29] Abaya, is part of the formal veil used by women outside the house in SA, the costume consists of two or three pieces (i.e. the main piece which is called abaya or abat, it covers the whole body, then there is the headscarf and a separate face cover). This substantial garment is taken off when there are no foreign men in attendance, which is often the case at women's events (this is unlike in traditional contexts where some women left their abaya on as long as they were outside their own homes). Therefore, they have to be folded if no place is offered for hanging them. However, folding them is not the ideal choice, as nowadays they are fashionably designed and their styles, materials and details are too sophisticated (especially ones intended for social use) that their prices are relatively expensive, and folding them may cause damage by creasing the fabric.

Category	Space/component	Note	Related pages
Focal points	Central staircases	Whether curved or with only a grand first flight or a standard form, stairs require special attention from homeowners in terms of position, form and finishes[30].	Figure 4.35, p.210
	Indoor swimming pool	This is a spreading trend[31]; it may be located in the basement, especially when space is limited, or it can be placed in the centre or to the side of a house's ground floor layout, but isolated through full size glass windows. The size depends on space and air-conditioning provided, plus water heaters are needed for winter periods. The ceiling can be double or standard height.	204 235 (figure)
Additional accommodation	Annex apartment/duplex	A sort of duplex attached to the main house or an annex apartment located on the 2nd floor (i.e. roof level). It can have a segregated entrance /stairs directly from the street or an entrance from the house's setback depending on its position in the setting and its use i.e. rented property or for a family member.	175 151

Figure 4.34 Entertainment/games room (H4)

[30] The main staircase can be so dominating that a vast amount of space is used for it. The objective behind this phenomenon is to reflect a sense of luxury by copying large staircases found in palaces or hotels, for instance.

[31] Public swimming pools are not common and can cost a lot, they also do not provide the advantages a private one can offer, such as guaranteed privacy, especially for females, plus availability and accessibility at any time or day for any family member. This is added to the pleasure they provide as an interesting semi-natural feature in Saudi houses that are surrounded by boundary walls and rarely overlook beautiful scenaries.

Figure 4.35 Staircase designs

(T2) 3.4 Environmental aspects

Investigation has focused little attention on the environmental aspects of residential architecture. The most considered element in this regards was plot orientation, a buyer will look for an east-facing plot, which are relatively higher in price, then north, south, and west-facing plots are respectively the following preferable choices.

> "Clients are not at all concerned about environmental aspects. They only will say - for instance- "I want a north-facing plot", then when you ask why? He will say "I do not know". It is just a habit". A6

Some architects/homeowners will try to avoid having many or large window openings towards the west side to reduce extensive heat during sunset periods. Nonetheless, this is not an act

preferred by a majority, only a few high-standard architectural offices deal with this factor effectively, one reason may be that they work on projects with relatively bigger budgets and clients with a greater understanding/appreciation of the architectural profession.

> "…then comes insulation and the importance of insulation, we have for example glass specifications, of course this comes at an expense, so if a person does not want to pay, he should reduce the size of openings, and he has to be smart in deciding the orientation and size to reduce affects and cost". A8

Findings demonstrated that some architects would support environmentally friendly building design, e.g. providing shading elements (e.g. Figure 4.36) and insulation, nevertheless, they all ultimately adhere to their clients' requests, which are often affected by cost.

> "In a design, we try to close the west as much as possible, but avoiding it completely and having a house with a 100per cent sun treated design is not accepted. If we suggest louvers, the client will laugh and say "just put double glazed windows and air-conditioning"". A4

> "We used this form because the land is facing west and east, we tried to place the entrances towards the west so the living room and master bedroom on the ground floor faced east to avoid heat (Figure 4.22)… [In a different project:] the southern elevation has louvers to manage the environment, I suggested it to the client and he agreed". A2

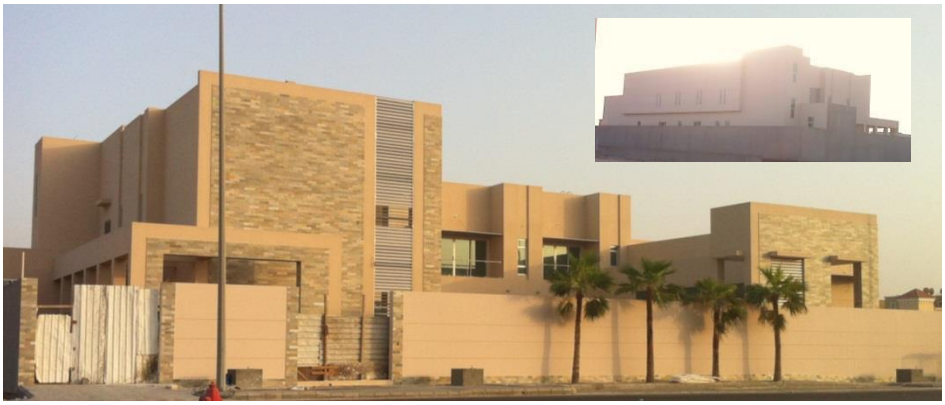


Figure 4.36 Louvers and environmentally considered window positioning

The lack of awareness and institutional encouragement of environmentally friendly design, whether towards the profession or the public has an impact on this phenomenon.

> "In America, if you have one turbine that generates power, you reduce your consumption bill rate, while here it makes no difference". A8

> "It is not a high-scale technology, it is simple. You have the sun and wind, and we try to integrate it in the architecture". A8

(T2) 3.5 Interior design and furnishing

Usually the homeowners decide upon interior design and finishes. This said, in recent years, professional interior design services have grown widely in popularity, and the idea of hiring one is considered more acceptable by homeowners.

In terms of materials and furniture, two issues were highlighted through the investigation, first, the lack of resources, this referred to either resources that can guide homeowners where to find certain items, or resources, explaining what materials are available and their specifications.

> "You cannot find places to go, i.e. to a shop for things like doors, I did a research on the net for the name of doors and their shapes. If the architect's office has leaflets about -for example- where to find tiles, even if they sell or loan them to clients it would be good, you can find nothing there." H1

The other issue is related to not being able to afford the cost of finishing, as they occur after spending a lot if not all the building budget on construction. This may be a result of poor building-cost evaluation services (discussed in the following category) and/or individuals' poor knowledge about market prices. In truth, many houses are not completed on time and the owners cannot furnish the property as desired.

> "I have not furnished the upper living area or the girls sitting area. Many things were not finished. I had in mind that it is for life that is why we did not finish it all. I should have finished within a year, but at first, it was because of our finances, then I went back into fulfilling many things I lost track of my children and myself, I got exhausted. However, we need to do it, even my husband says we need to finish… Most things are available, but with very high cost. You might find similar products but with poorer quality, it does not satisfy you. You do not have many choices." H3

(T2) 4. Approaching a new project

This empirical category explains the initial stages of a residential project. It details the important choices and decisions that can influence and affect remaining stages and outcomes. A long diverse conversation between the architect and the client is a major feature of this stage, as the architect's experience, skills and talent can determine the type and extent of the information exchanged with his/her client. Nonetheless, the clients' knowledge about practice and processes, along with awareness about the project's requirements and their own needs also plays a significant role.

On the other hand, there are other elements in this initial stage that vary in terms of being acknowledged as essential to the process and some are considered by experienced members as part of a logical routine. However, these have not been documented elsewhere, so documenting them here with the findings is important and beneficial to assure they are not overlooked or postponed to later stages, leading to adverse effects.

(T2) 4.1 Selecting the architect

Most feedback suggested that selecting an architect or the architectural firm is done through other people's recommendations, e.g. friends, neighbours and other family members who have gone through that experience (A2, A9, A10, H1, and H7). The following common method involved viewing one or more projects already completed by an architectural firm and then deciding to hire them.

> "Clients come to us through other clients' recommendation or by seeing our projects". A2

> "Generally based on recommendations, or having seen our projects or looked on our website and seen our work there". A11

> "We go to well-known offices, but sometimes you get involved with a good architect, and sometimes you do not [who both work at the same office]. Or the one you like leaves the office". D1

> "You ask people, and they recommend them". H2

> "We saw a house we like so we went to the same architect and said to him, we want the same thing but make it bigger". H3

Another factor found, related to female architects. Some prefer employing a female architect believing that this will offer more comfort during the process when the client is a female or a female and her husband.

> "I guess being a female encourages my clients to bring their wives". A10

Although the majority did not complain about their selections, there were examples of individuals who regretted their choice of architect. They explained that they had issues about the architect being unable to understand their requirements in terms of the layout design, e.g. A6 and D1.

(T2) 4.2 Standard processes

Standard processes include the provision of official-documents from the municipality and from surveyors recommended through by the municipality depending on the plot's location. These documents describe the plot's properties and prove ownership, they included a detailed description and a plan showing the plot's size and surrounding land.

Architects vary with their approach to this requirement, while some have it as a condition before starting a project, others deal with it as a routine procedure that can occur at any time in the conceptual design stage, which may last months. The location of the plot may have an influence on this decision, as some areas have more established criteria and standard regulations in terms of setbacks, for example, or no major impacts on the layout design are expected if slight differences in magnitude are discovered later on.

> "First we have to carry on 'tahdeed almasaha' i.e. plot survey, in many cases there are mistakes, so I request for a new one to confirm the details. The design may differ a lot depending on the plot dimensions and setback allowance". A10

(T2) 4.3 Design cost

Most offices and clients have an expectation about the cost of designing a residential project, and clients decide what range they are prepared to accept. However, a huge difference between prices were found (see (T2) 2.1: Project types and fees, p. 192). This said, the cost is discussed before attempting any other task, and down payments are arranged and paid (also discussed in (T2) 2.1).

Construction costs and budgets are also mentioned during initial discussions, although this can be a sensitive issue for some, as they do not like to discuss financial matters (A8). Knowing the client's budget allows the architect to understand the span/limitations of the design in terms of size and detail.

> "From the beginning, I tell my client how much it will cost. Also, if his plot is large and allows a big building, I ask him about his construction budget. Our experience shows us that people come and have no idea about construction costs, so I have to ask how much are they budgeting for. If he says, for example, 500 thousand SR, and he is asking for a plan that will cost two million, I immediately try to make him understand and explain that this is not possible… Many people are convinced, but if they have doubts, they will go and ask friends and contractors and they will confirm what we have said to them". A6

(T2) 4.4 Members involved in the design

It came to the researcher's attention that the architect's gender had an influence on female clients involvements, as clients dealing with a female architect mostly attended meetings as couples and social details were discussed more freely (see (T1) 1.4: Female involvement, p.135). Saudis cultural background supports this phenomenon, accordingly, the selection of an architect can be influenced by this criterion and vice-versa, i.e. females involvement may be affected by the selection.

> "The first visit is by the man, and then after he decides to carry out the work with us, the wife will come". A10 [female office]

> "They [clients] are always couples, except for one project when the man came alone". A11 [female office]

Nonetheless, male homeowners are the dominant members guiding the projects, this is followed by female homeowners or homeowners' wives, owners' children who rarely get involved in attending the architectural office, and external members such as relatives, friends, other professionals e.g. interior designers may attend and share in discussion with the architect in a residential project.

(T2) 4.5 Initial information obtained

According to interviewees, the first meeting is when the architect and client discuss the new house' program, and is typically the longest, lasting up to two hours or more.

> "We usually ask them to allow two hours for the initial meeting". A10

An accumulation of findings in relation to the subjects discussed during the initial meeting may include all or some of the following topics: plot details and building regulations in that area, project budget, the duration of each stage and expected submission deadline, the program i.e. space components (rooms) and sizes, architectural forms and preferred styles, and socio-cultural and personal requirements. The final topic differs significantly between projects/offices, it is usually brought up in the second meeting after agreeing on price and completing essential ownership documents. It also differs between projects as ability and willingness to describe personal/family characteristics and their general lifestyle varies between people and between architects.

> "I even make notes on social details". A2

> "Budget is very important and it is painful when you want to do something and cannot afford it…We try to understand what lines they like i.e. straight or curved lines". A10

> "First we ask about the plot size/dimension and their building budget. Then about the style they prefer, classical/modern… the client tells us about regulations, and if we need other information we ask him, so we do not carry on any responsibility". A11

This said, although the topics seem similar in the level of details, nonetheless, the usefulness of the details mentioned to the designer are not the same. Many factors influence this variation such as clients' familiarity and understanding of his/her needs and how to interpret them. What is more, the data obtained does not necessarily guarantee a true utilisation of the information in the layout design.

> "Some people come knowing what they want by 70 per cent". A4

> "A small percentage understand, i.e. 90 per cent come into the office with a palace in mind, gradually they end up with an apartment". A6

The method used to record the data gathered through meetings also varied between offices/architects (further detail can be found under (T2) 5.5: Tools in communication). While some took notes, others required filling in questionnaires (four of the offices interviewed used a questionnaire method i.e. A3, A8, A10 and A12). The questionnaires focused mainly on the program, technical aspects and general style preferences.

> "We take notes, then write them up properly showing the design program and send it to the client for approval". A11

(T2) 4.6 Basis for a good project

Feedback from the field study suggested a good project, i.e. a successful design and construction can be obtained when and if the architect is trusted by the client and given a level of freedom in the design, this alongside a healthy budget for the design and the construction phase.

> "The most important thing is that the client depends on the architect's ability and trusts him, and is willing to pay". A4

> "Many clients will say 'give the bread to the baker even if he eats half of it' they have extreme trust in us and say if you think it will look good then go for it". A10

> "An architect has the ability to provide a nice design for a small budget, a line can cost a hundred or a thousand, but some people would rather depend on contractors". A8

Nevertheless, many other factors have their impact on HD quality, such as, the involvement of other people than those who will going to live in the house (e.g. friends and relatives). In addition, the architect's talent, which is vital and has been discussed on a number of occasions in this chapter.

(T2) 5. Communication methods, tools, and issues

Face-to-face meetings are the standard contact method between architects and clients at most stages of a HD project.

> "Whenever they need something, they come to the office. Coming into the office expresses the client's care and interest in the project as it will cost him a lot". A9

As mentioned in (T2) 4.5 above, the first meeting (where the program is discussed) is usually the longest, and most topics can be expected to come up. For the architect, the project type and size is the starting point, whereas the cost of designing the house is often the key point to clients.

Client's general level of knowledge can determine communication approaches. That is to say, the method, tools and language used is affected by the client's characteristics in terms of his/her ability to understand certain elements, such as architectural jargon and drawings/plans, and in return to interpret their own needs and requirements in a clear and logical manner.

> "Through conversations in the first meeting, I know if the client is tolerant/open-minded". A9

In a house project, the architect is designing a context for a whole family with a unique lifestyle. Every detail can add to his/her understanding of the client/family's day-by-day needs and desire to live comfortably in spaces that support their lifestyle. This may contradict with the conservative socio-culture of Saudi members, particularly if it involves personal family issues. In order to overcome this obstacle, which many architects admit to finding difficult if not completely avoided by them, special methods were discussed by some architects hoping to obtain as much of an understanding of the client's real and unique characteristics as possible. Questionnaires and a more social type 'talk' about the project are examples of the communication methods used by some of the architects to encourage further detailed information.

> "I liked the architect's (A2) approach, he met with me and we talked for about two hours…all of it was talking/chatting. I did not face any difficulty explaining what I wanted to him". H1

The following points explained the concepts found in relation to communication in a residential design projects in Saudi architectural practices.

(T2) 5.1 Communication, with whom?

Section (T2) 4.4, discussed who usually are involved in a HD project. Involving other members in design discussions can result in many alterations, which consumes more time than if homeowners alone were involved. Architects and developers likewise, have emphasised the destructive and frustrating impact of this, stressing that the house should reflect its owners' needs, which should not be demanded by others.

> "We do not allow relatives to interfere in the design ideas, as many ideas make you feel lost". A6

> "Some meet with friends or relatives and come up with different things, they do not appreciate that they are working with a professional architecture". A9

(A11) completely disallows any drawing to leave the office prior to completion and insists that comments and alterations be suggested with the client in the office during meetings to minimise their impact.

It is worth mentioning here the role and impact women have on the discussion when they attend architect's meetings. Architects have commented that women explain their requirements in greater detail, and come knowing what they want as they have studied the possibilities in depth, some bring a portfolio showing their ideas. They (women) take longer time than men; however, one architect (A6) stated that women do not understand architectural drawings and details and can cause delays to a project, he emphasised that he prefers working with male clients as they are easier to deal with. On the other hand, architects like (A8 and A11) believe that homeowners' wives must have a say and should be involved in the house' design and share discussions.

> "Women are more difficult". A6

> "It is better if they [husband and wife] are together, so if they disagree on something we can discuss it and reach a solution at the moment". A11

(T2) 5.2 Discussed variables

1. Functions and styles

> "Most clients talk about functions before appearance". A4

Some clients, especially females, describe detailed features and activities when explaining their HD requirements to the architect, e.g. shape of the furniture.

> "Women describe themselves as if they are walking in the house and will say 'I want to go in and find the sink here and looks like this...' they will go into details. While men are more practical, they will tell you ...I need (X); the majlis area is (X), I want it to be enough for (X)-people". A11

The architect will listen to them, but it is most likely that most of the information will not be considered in the design because of one or both of the following reasons: 1- The architect believes that this is not relevant to the architectural planning stage and is part of the furnishing or finishing process, i.e. interior design. 2- Finishing products, if indicated in the design e.g. stone cladding, may change by the time the construction is completed, as it often requires a year or more between planning and the application of finishes. During this period, homeowners may change their preferences or product availability and affordability factors may change. Nevertheless, some architects will include their client's requirements in the plans but this will not really help during application as sources are not identified alongside them, nor are detailed working-drawings.

> "I showed the architect the door I liked, and he said no problem". H1

That said, the researcher believes that architects should listen wisely to clients' small, yet valuable details, as they can strongly provide an indication for the form of architectural layout and space relations the client is aiming for. One approach found to support this argument, was to include an interior designer in the architectural layout design process, as he/she will help ensure the practicality and usefulness of spaces, as A11 affirms:

> "The interior designers and I all get together and discuss projects, I have honestly benefited a lot from them, e.g. they will say if we have the window here then we will be able to have a niche over here...even with a furniture layout, how to make use of each corner". A11

Style, on the other hand, is either mentioned at the beginning or when designing the elevations.

> "The hardest information to get relates to the style, nobody knows how to deliver the idea to the interior architect unless he is a professional in this area". A12

Further details on style and style selection are discussed under (T2) 8: Concepts and styles in designing houses.

2. Personal and social details

Much has been explained about this subject previously in this chapter under the first theme, and in (T2) 4.5: Initial information obtained (above).

> "I first ask my client if he is married and how many children he has and about their gender, I also ask if his father and mother are living with him. Then I ask about his budget, because some dream about having a place but their budget is too tight". A4

> "Many clients do not consider social details and will not talk about them. There are designers who also do not raise the subject, they say he is paying me 5000 [i.e. too little] and wants me to write a book about him or turn into a psychiatrist". A8

3. Detailed components/elements

This mainly refers to particular details and features such as doors and arches, columns, window sizes and positions, lighting, staircase shape, electrical sockets' location…etc., remembering that not all architect-client discussions will include such details.

(T2) 5.3 Withdrawing information

Architects obtain necessary and useful information from their clients, through either direct or indirect questions and conversation.

> "You can understand levels of conservativeness in many ways, sometimes, I just ask about it directly…" A4

> "You understand a client's openness through the way they talk with you, if he looks you in the eye and talks freely, you understand that he is more open than a person who is restrictive about what he says/shares with you, e.g. if he asks a question, he may look at his wife. While she explains it and says, I don't want this to overlook this..." A11

> "We usually ask direct questions then through discussion we understand further details. This is at the second stage, during the design development phase. In one of the meetings we speak about details as a checklist". A8

> "If he has young children, he will want the whole suite to be lockable to control entry". A2

> "I will insist that they bring their children no matter what their ages are, I study them. If you see calm children I design a relaxing design, but if the children are

very active and are moving around and jumping, then I understand that the design should reflect them, e.g. be safe for them with no sharp edges and so on". A10

(T2) 5.4 Communication language

The language used in discussions in terms of its clarity is essential for the success of the process. Nevertheless, architectural jargon or metaphor, although not intentionally stated, can cause misunderstandings or confusion on both sides, i.e. the architect and the client.

> "The plans have a sense of movement, beautiful". A1

> "Some people do not know how to express their needs in a design. They speak as if it is a dream they designed in their mind, they are not able to describing it in architectural terms". A4

(H1) as an example, offered a clear and direct description of what she wanted and looked for in her HD:

> "I told him I like old things and new things and I like earth colours and I like the sea, I said, I do not like Egyptian and gilded things… I like high ceilings and crystal chandeliers… I like antiques, but I do not like to put stuff on the table… I do not like modern a lot because I feel it is not comfortable, you sit on it and it is not comfortable… I do not like TVs, beside from in the living room it is important, and in the men's sitting if women are in the living space, in my bedroom, it is the same I do not like a TV or a radio… I also do not like to waste space…". H1

(T2) 5.5 Tools in communication

Both architects and clients try to find ways to demonstrate what they want and mean when arranging the HD. Some architects (e.g. A1 and A10) believe that people have a good understanding of drawings, while others (e.g. A6) find it very difficult for some of their clients to understand plans and how will they transfer into reality as buildings. One architect (A8) stated that clients are not expected to understand the plans, but rather, is the architect's duty to find a way to explain them to him. In this respect, the investigation revealed a variety of approaches and tools used to enhance understanding:

1. 2D and 3D drawings

All the architects interviewed aside from one, believed that 3D drawing helped a lot when delivering the house layout and exterior design (e.g. Figure 4.37). However, they were done at extra cost, so not everyone requests them.

"After we draw the first proposal, the client then start explaining what he likes and dislikes and we start to understand his requirements". A6

"I start with the layout (2D plan) then through discussion I discover new things, but with some I understand their lifestyle just when the house finishes". A1

"There was something he did not understand, so we had to do a 3D computer model. When he saw the 3D drawing, he said, that is it, do not change anything. 3D is very important, it is what sells the work". A1

"The 3D design is the most important and powerful tool used to convince the client and help complete the project rapidly". A5

Figure 4.37 3D presentation of a development by A3

2. Images, magazines and catalogues

These are very common tools used by both parties. Architects particularly utilise these to demonstrate style options, while clients explain many details using images, they sometimes collect a comprehensive portfolio of them. The availability of all style types and up-to-date images on the internet has made this activity even more common since it (internet service) is now relatively cheap or free, making it an unlimited arena unlike magazines or photographs for instance.

"The most important thing at the beginning are pictures, we show them to narrow down the scope". A1

"I always advise clients to bring images of designs they like, so I can understand their taste and what they are looking for". A8

"If the wife is involved, she will have studied the project for a long time and have a folder of pictures from magazines and so forth for each room". A9

3. Existing projects

Some architects use their previous projects, i.e. drawings or constructed projects, to suggest initial concepts to clients or to demonstrate their type and level of work. Clients, on the other hand, may bring a copy of plans they like (maybe a relative's house), or ask the architect to replicate a house they have seen, or to copy different parts from different houses, e.g. main gates and fences from one house and window frames from another.

Nevertheless, some architects refuse to copy existing designs or repeat their own designs. An architect stated that even if a client brings a plan, it does not remain the same, as he asks to alter the dimensions or the plot size forces different spatial organisation, which eventually will change the whole design.

4. Questionnaire forms

Four of the architectural offices interviewed reported that they employ a form of questionnaire in their HD process (A3, A8, A10 and A12) (see Appendix 2 for examples). However, objectives from the questionnaires and the questions asked varied. In general, they agreed that the questions helped them to understand their clients and their needs, and vice-versa, that is, it helped clients to recognise and identify their requirements, and "make better decisions" (A12), it also added a sense of formality and "professionalism" to the process (A10).

Forms were also used as part of the agreement/contract documents, especially in the case of development projects. According to (A3), when undertaking development projects the client's representative, i.e. the one who carrying out the design related tasks, may change during the design process, and the new representative may assume or expect different requirements from those arranged by the previous representative. Therefore, having a signed program in the form of a questionnaire can maintain initial agreements and prevent future misunderstandings. The questionnaires also helped the architects to focus on all the essential variables, so none are missed or overlooked, and to assure that everything is covered from the outset.

Although questionnaires can be useful tools for obtaining detailed data and recording it, verbal discussions and conversations can maintain their value in terms of usefulness. They add a further dimension to the data obtained, as they provide subjective information and meanings that cannot be reached using a static questionnaire form. A face-to-face conversation also offers clients a sense of assurance and builds their trust with the person in charge of designing their future home, which can be linked to the human-centred design perspective.

Nevertheless, several architects stated that they did not use a questionnaire, and that their length of experience is enough to maintain a successful process.

> "I do not believe in checklists, I may have one in the background of my mind through experience, it is not a systematic process". A2

One designer, when asked about whether introducing a questionnaire may help in the process, thought it would be an interesting idea and stated that she might consider it.

5. Notes and sketches

Drawing diagrams and basic sketches and taking notes during discussions is an activity shared among architects and designers; after all, it is a part of the nature of design. What differs between practitioners is their utilisation of the notes taken during these discussions. Some will treat them as essential documents and retain each client's notes in a dedicated portfolio, along with all other documents from the same project (e.g. A2, A11), while others will use them for reference temporarily while recreating their content in the design.

> "We take notes, and then write them up properly showing the design program, afterwards we send it to the client for approval". A11

6. Emails

These are rarely used, although emails have been mentioned as a method for communicating with clients. They are not common due to the nature of the task, which is performed better with discussions and the support of visual aids e.g. plans/drawings. The majority of clients do not have the computer skills to review and alter plans properly, and if this is not an issue, the time-gap between the parties' feedback and shared understanding and agreement makes it an impractical method.

> "One client came once then used emails to discuss alterations". A9

7. Phone

Phone calls are used for minor clarification, and to consult with females, especially those who do not wish to attend personally at the office, giving them a chance to get involved, participate in discussions and share their requirements.

> "I discuss projects on the telephone if the client is travelling… I do not accept this method for all clients, they have to be highly aware and understand drawings and how to describe their needs". A10

8. Architect's experience

Personal experience has been highlighted a number of times when explaining the communication methods architects adopt. In terms of initial data gathering, some architects believe that experience is adequate to cover all the communication elements necessary, it is not something that can be put, or needs to be put, on paper, or presented in a systematic process.

> "We do not have a checklist…from experience, they are standard components, majlis, living, dining…etc." A6

Although this perspective may be debated, experience was identified as a crucial element in residential architecture. However, the definition of experience referred to the number of years and projects carried by the architect, and time as an architect does not necessarily denote 'good' experience. This was noticed in some of the low quality HD production produced by experienced architects whose work was found to have poor production standards.

9. Negotiation

The act of discussing alternatives or new ideas and suggesting solutions with a client is listed as a communication tool. This type of negotiation can be a valuable tool, once the architect has attained the right negotiation skills and talents.

> "We kept on altering plans for a year, then suddenly the architect left and another took his place. This one finished within a month! He was a bit more serious with the work, he would say, come on, this is it…decide. He would not give you a chance to play around, i.e. we used to go and change one day and enlarge the other… he would say, why enlarge this space you cannot do it, the space is good… etc." H3

Moreover, negotiation can employ other communication tools, aside from verbal discussions; however, selecting the most appropriate tool for the task and to suit the client's nature is part of being a successful negotiator.

(T2) 5.6 Communication issues

The following points explain the issues that may occur during the architect-client communication regarding a residential design project. This list was concluded based on the data gathered, it does not claim to be inclusive, neither does it reflect all practices.

1. Weak communication skills (architect and/or client):

> "A third meeting with a client, and I still do not know what he wants! He has a sloped plot and obviously wants to benefit from that feature, but he was not able to explain what he wants exactly. So he got tired, and I am also tired of him". A4

2. Poor selection of tools: using tools that do not suit the task, or that do not correspond with the client's level of knowledge and personality, also overlooking tools that may enhance communication;
3. Not having a clear process that can be evaluated regularly to develop in practice;
4. Failing to discuss what could be useful information;
5. Poor documentation/noting methods potentially resulting in loss of data;
6. Overlooking small details;
7. Creating a design based on basic data;
8. Focusing on space types and sizes and not lifestyle, which may lead to poor spatial relationships in the design;
9. Not considering anticipated future changes;
10. Individual/solo representation in a family HD project;
11. Weak/poor data obtained from the client, due to Socio-cultural barriers in discussions;
12. Conflicts between the architect's taste and the client's taste;
13. Not considering professional advice and recommendations;
14. Not understanding or appreciating architect's role;
15. Clients' lack of awareness of the HD process;
16. Client's inability to read plans;
17. External interference in the design, i.e. people other than owners; and
18. Minimum communication/discussion about the project and less effort/time spent on design by low cost architectural offices.

(T2) 6. The conceptual design

The first layout proposal, which is referred to at the 'conceptual design' stage, includes a ground and first floor plan. It is considered by most offices interviewed as the first stage in a HD project and this is stated in the design contract agreement. Nevertheless, the proposals demonstrated in many of the examples reviewed by the researcher extended beyond the conceptual, in accordance to the literal definition of a conceptual design. The drawings provided a nearly complete design layout, which was close to the final drawings aside from the detailed measurements and technical aspects, such as columns and air-conditioning shafts.

The conceptual design was the product of a conversation between the architect and the client. It does not take long to produce; some offices can have it ready within a week or two.

(T2) 6.1 Whose input is it?

In HD-projects, there are two main parties, the architect and the client. Both parties play a role in the design outcome, but the extent of this role varies depending on context. Three types of inputs or scenarios were identified from the research:

1- The client provides a basic request, which details the type of building and the number of rooms and bedrooms, along with the plot's details, while the architect presents all the essential design input, and may replicate previous designs with minor interference from the client. In this type of relationship, either the client has no understanding of the process, and is therefore seeking a standard design, or the pure objective of the project is investment and this has been carried out repetitively by the client/investor or a similar colleague in the past (most probably with the same architectural office).

> "There are some people that take everything and have no input". A1

> "The client should talk about their social life if they want. I do not feel I should interfere, so none of us is embarrassed". A11

2- The conceptual design offers a combination of client's needs and the architect's experience and professional knowledge. This mostly results from an efficient process and successful conversation between a talented architect and an understanding client.

> "If you deal with ideas, and few requirements, you have freedom to create what you want". A1

> "To teach them how to use spaces in a different way…This is the architect's role". A2

> "To design for someone, you have to impersonate his personality. And you have to convince yourself about the idea before you share it with him". A4

> "We usually have a meeting here and discuss the conceptual design, 1-4 hours, we talk about what he likes and dislikes and agree on what will be done. And depending on the amount of changes we book the following meeting". A10

> "I do not want you [the designer] to show me designs and say this is the final thing". A1

3- Clients with forceful requests arrive at an office with strong ideas and reject compromise. They do not accept any advice or justifications from the architect. In such scenarios, the client makes a presumption about the profession or is too confident about his choices, or it may be that the architect is unable to understand the clients requests, many factors can cause poor project-relations. Whatever the reasons are, the process then becomes difficult and complicated, and often, the outcomes are not error free.

> "Sometimes a client insists on one condition and will not relax it". A2

> "Some clients are frustrating, I've been with one for two and a half months and still have not finished. They transform you from a designer into a drafter!" A4

> "They may want many things that do not coordinate with each other or with the site's size or budget". A2

> "I chose the whole design and drew a sketch for him [the architect], he did not understand my idea, he just made the architectural drawings". H6

In summary, architects will mostly abide by clients' requests, even if they are contrary to their own interests, in order to insure continued flow of revenue into their businesses, with the proviso that requests are in line with regulations.

> "Maybe internally I feel that I cannot do any more changes, but I would not express this to the client". A9

> "There are elements you cannot change if the client likes them, no matter how creative you are, he will not like it. You need to understand your client". A8

(T2) 6.2 Factors considered in a conceptual design

Other than essential space and structural requirements, there are other factors to be considered during the conceptual design stage for a house, such as:

1. Prioritisation of requirements: this may be influenced by physical attributes, such as space allowance and budget, or by personal and social preferences;
2. The extent of flexibility in spatial arrangement and the provision of alternative solutions
3. Special family members' requirements;
4. Interior design requirements;
5. Window locations and forms;
6. Exterior design preferences;
7. Expected future alterations; and

8. Expected allowance for amendments to the conceptual design by the client.

(T2) 6.3 Replicating other designs

Although 'copy-pasted' designs are common among some architects, who nevertheless claim that they do not carry on such activity, a number of them have suggested that even if a design has been based on a previous project, new clients will amend certain elements in the original design so it is not then considered a replication. However, copying small to medium apartment building's designs is common and acknowledged by several architects (see (T2) 2.1: Project types and fees, and Figure 4.24).

> "I do not like this approach [replicating designs]; if you have trust in the office and architect, leave it to them to design the plan. Some think it will cost less because they halve the design efforts, while some have just seen something built and liked it". A9

> "We saw a nice house, it was neat, and all the components suited our needs...we went to the same architect and said to him, we want the same thing but make it bigger". H3

(T2) 6.4 Issues in the conceptual design stage

While examining the conceptual design category, some specific and frequently mentioned issues were identified:

1. An unnecessarily long time to finalise;
2. Irrational design requirements;
3. Understanding the client's needs after developing the conceptual design;
4. Client's inability to read plans and/or understand space parameters and allowances;
5. Unrealistic (client's) expectations in terms of design components and size;
6. Inability to incorporate interior design requests with architectural layouts;
7. Inadequate space allowance designs, e.g. driver's rooms too small; and
8. Conceptual designs not showing elevations or window designs.

(T2) 7. Design resources

The design of houses and small apartment buildings, can become routine for architects, in other words, the motivation to innovate concepts and styles reduces over time. As a result, residential architecture in the region has demonstrated minimal change, in comparison with the rapid

changes in architectural technology and design in general, and developments in other fields. Many architects have not updated their resources and some confirmed to not using any resources to develop designs, unless enforced by projects with certain criteria, such as projects demanding specific themes from municipalities.

> "I have books but it has been a while since I read them". A4

> "I have absolutely no time to review magazines or the internet". A6

In answer to a question about the type of resources used in residential designs (asked to architects and homeowners simultaneously), the researcher was able to accumulate an array of design resources that were then adopted by some practices and clients as a consequence of the direct and indirect findings of the investigation.

(T2) 7.1 Design resources used in Saudi HD

The most common resources, aside from personally accumulated knowledge were images obtained via the internet, which mainly illustrated styles and forms rather than design approaches, or concepts, or advanced architecture and building technologies. The following points illustrate all the design sources identified by the researcher and used in Saudi residential architecture:

1. Architect's (Saudis and non-Saudis) own cumulative experience and knowledge through practice:

> "Experience is the most important reference". A9

2. Influences from other places, this can be a result of travel, living abroad and use of foreign architects.

The act of adopting ideas from different cultures influences the socio-cultural phenomena realised by houses styles and forms, it also can affect other identity aspects and regional representation in local architectural settings.

> "I view projects that are constructed in nearby countries like Dubai". A2

> "We reviewed some designs from Dubai [when required to use regional design features]". A9

Ideas gained from travelling were frequently obtained from hotels. Hotels are designed with the intention to suit international tastes, and do not reflect the individuality that is often present in

home designs. Nevertheless, following this direction may help in guaranteeing success in pleasing the majority of people visiting/viewing the person's house.

> "I travel and bring some pictures of hotels interiors". H1

3. Former projects, whether of the architect's own work or different projects viewed by clients. These may be in the form of constructed buildings or only architectural drawings.
4. Client's personal lifestyle, the client builds upon his/her own lifestyle experience in previous living environments as a design reference, i.e. by transferring and mimicking existing concepts and forms.
5. Other people in contact with the client, i.e. friends, relatives, or other related professionals such as interior designers.

> "I developed many of my ideas through people". A1

6. Books and specialised magazines, which are available in bookshops and available to purchase online. However, good quality ones are often expensive, as most are in English, this constrains their use to a selection of people.

> "For styles we refer to books, and try to update our sources regularly from local shops or Amazon". A5

> "We have a large library and we use the internet". A2

> "I used to buy Almanzel [the house] magazine during the finishing stages". H2

7. The internet: generally accessible and relatively free. Nevertheless, language can have an influence on the types of material retrieved.

> "With the internet today, no one can say it is difficult, although I have a good library, the net is faster". A9

> "Nowadays because of the internet, there are a lot of images and they do not rely on existing buildings, a client brought a folder of images he collected". A2

> "I did research on the net on the name of doors and their shapes". H1

8. Photographs: were more common before the internet when people used to travel around neighbourhoods and take photos of houses and the features they liked, and then take them to the architect to reproduce their designs.

> "There are people who go around streets taking pictures of palace gates, wanting similar ones for their tiny houses". A4

> "We went around [a high-class neighbourhood] and took pictures, all our gates are adapted from them". H6

9. Retailers' showrooms: new products, materials and furniture are set in creative displays and people search for inspiration as well as the products themselves.

> "We went to the cast-iron doors' workshop, he showed us a number of designs and we chose the one we liked most". H2

10. International exhibitions: only a selection of people and high-standard designers make use of this source.

11. Academic work: e.g. students projects, dissertations, journal articles, conferences and exhibitions; these are rarely used as design references. Publications are available at selected national libraries or academic archives, which makes them difficult to obtain and inaccessible to the majority of people, nevertheless, the academic format does not attract general people and professionals seeking practical and focused references.

(T2) 7.2 Resources for regional designs

In focused enquiries about the type of resources architects use for their regional designs, a clear lack of adequate sources was demonstrated. The researcher found hardly any enthusiasm directed toward regional designs, as these were generally responding to regulatory requirements in commercial locations.

The researcher believes that lack of accessible resources and successful examples of contemporary regional applications causes this attitude toward the adoption of regional designs and concepts. Moreover, the fact that the majority of practicing architects are not from the region and have no background knowledge or reasons to motivate them to deliver projects with a modernised regional design. Nonetheless, adapting such projects is potentially more difficult for them as it will potentially take them out of their comfort zone, in depth research and analysis of traditional architecture is essential to produce thoughtful and successful designs.

> "There is no database, we had a large commercial project [shopping centre] that had to be in a regional design, we found it very difficult to find information, it was a research project… We found some on the internet and some information in Bahrain… It is important to have a database, there were not any that I could find, but it is possible there were some". A7

> "A database would help me as a designer, but I looked for one and could not find any. I found images, and a person who made sketches, but something I can study or

> develop, no! Such information is important so we can develop traditional designs". H5

> "We reviewed some designs from Dubai on the internet, and some examples from the municipality… A database may offer me ideas about other regions designs, and if I like a style, I may develop it with a modern touch". A9

On the other hand, a lack of good examples may be the reason behind homeowners rejections of the adoption of regional architectural designs, undoubtedly this is so in combination with other reasons mentioned earlier in (T1) 6: Traditional architecture today.

(T2) 7.3 Issues related to design resources

Based on what has been discussed above, it is evident that architects/designers hold great responsibility in this regard, i.e. sourcing information and updating it, and more significantly, employing it constructively in their work. However, this was clearly not the case, and some issues related to design resources emerged. The principal ones were:

1. Language barriers in quality resources;
2. Poor Arabic resources;
3. Reliance on clients to obtain and present their own sources;
4. The lack of practical resources referring to Saudi regional architecture;
5. Architects lack of awareness of Saudi styles and the traditional architecture background.
6. Not allowing adequate time to research each project or to search for supportive material to improve understanding of the project, communication and discussions with the client, and the final design.
7. Not being able to take advantage of academic resources.

(T2) 8. Concepts and styles in designing houses

Concepts and styles merged into a single category because of the overlapping properties. Many people, professionals and non-professionals, do not, or cannot, differentiate between HD concepts and HD styles unless specific and direct questions are asked.

The immediate description of a HD will refer to its rooms, windows and overall size. However, when asked about its style, the most common terms used are either 'classic' or 'modern'. Nevertheless, conceptual design properties, which explain forms and layouts and 'why' they are shaped and arranged the way they are, are only mentioned briefly. Further explanation of the statements and style properties found in Saudi HDs is presented next.

Earlier in the first theme, under section (T1) 2.3, Style and design concepts selections (p. 156) was discussed as a socio-cultural property. Here, they are explained in relation to their application and physical attributes, as demonstrated in the following sections.

(T2) 8.1 Complementing or contradicting?

The observation and analysis of existing houses in SA demonstrates a *contradiction* between HD concepts and styles. Moreover, a contradiction between the interior and exterior designs of houses.

Figure 4.38 illustrates one of the examples studied, i.e. H3's house. In this example, the design concept was built around an indoor swimming pool with an open layout, which along with some of the interior details, e.g. ceiling and lighting, is quite modern. Whereas, materials used in the finishing and the colour schemes, plus the exterior façade are neoclassical. In this example, the owner reflected on her preference for classical features but was convinced by her interior designer to adopt a modern style for interiors, nevertheless, this was not entirely successful:

> "When we first started, we wanted purely classical, i.e. the columns, arches… everything. I wanted the same inside the house, but after we finished the house design and during construction, we met an interior designer, his ideas were all modern. He turned our thinking around completely. We designed everything with him but when it came to applying it, I felt that there were things that did not suit me, so I started to change them based to my taste". H3

In this experience and with similar ones, a person is torn between new and contemporary ideas and directions, and between ideas that have grown with him/her throughout his/her life and which have shaped his personality. Although changes are always possible, they usually happen in phases. They can happen and affect the surface of things but it takes more time and effort to reach the soul and be accepted as the norm.

This is to say that homeowners do accept new ideas to an extent. Moreover, if they contribute their own ideas to the design, it becomes easier for them to accept. Indeed, each person has preferences and priorities when it comes to selecting certain elements, and only through detailed discussions with the designers can these preferences be managed.

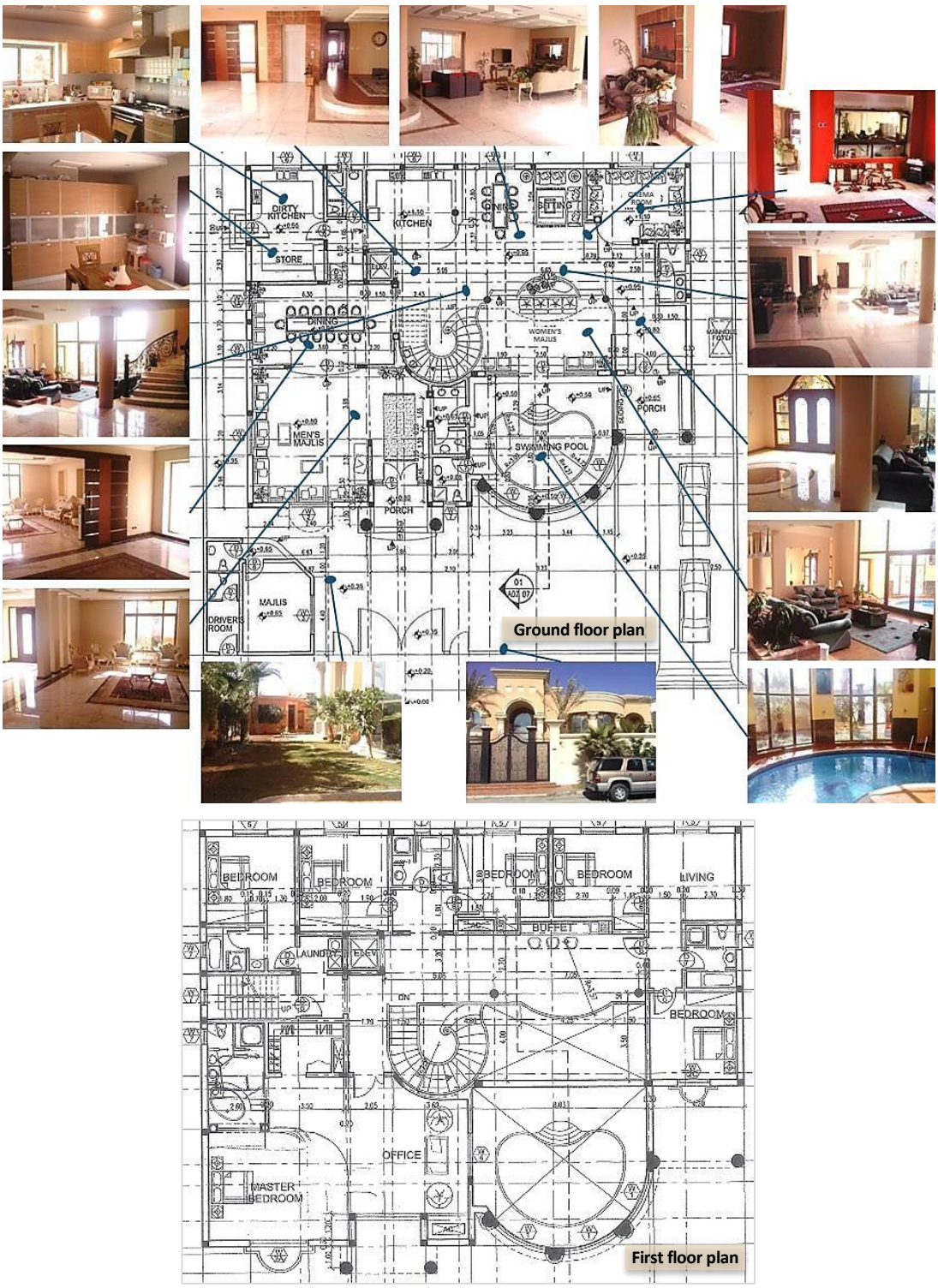


Figure 4.38 A modern house layout with a combination of modern, classic and neoclassic styles (H3)

In H3's case, elegance was a priority over practicality, and modern furniture did not offer this to her according to the justification she provided:

> "I wanted this sitting area to be modern (the family's living area) and I searched and found nice and comfortable furniture but I thought it was not elegant, and it would devalue the place. [HF: do you find the current sofa practical?] Not really, even the way you sit feels too formal, well, this is also the reception area (open layout) and I did not want my children studying or laying down on it" H3.

Correspondingly, contradictions in design concepts and styles were investigated further. Feedback from architects and homeowners revealed that house plans and exterior designs were frequently treated separately during the design process. That is, design decisions made for the house layout were not interrelated with discussions and decisions made when designing the exterior.

Furthermore, an exterior design may be altered from what is found in architectural drawings during construction. Owners often make these kinds of decisions for many reasons, financial constraints for example can cause them to cancel or reduce parts of the elevation design to reduce cost (Figure 4.39). A6 stated:

> "We modified the elevation designs according to the clients' requests, but at the end he did not apply it because he found it expensive. He then returns to us and asks for it to be changed". A6

Figure 4.39 Plain elevation designs with small window openings to reduce cost

Some house designs, especially those associated with development projects and low standard private houses, will have a standard design for elevations to complete the design package. During construction, private homeowners will select existing designs from other houses and ask the contractor to copy them, or adhere to a very basic design (Figure 4.40). In a question related to unauthorised modifications to designs, G2 from the Municipality stated that commercial buildings, mainly on main roads, are monitored for consistency with approved architectural drawings. He says:

> "However, we do not interfere a lot with houses in the middle of neighbourhoods as long as they do not use strong bright colours". G2

Figure 4.40 Basic elevation designs

Architects rarely made an effort to relate interiors and exteriors in terms of style.

> "In my opinion, if the layout is solved and orientations are treated well, style then is like clothes, a white or yellow colour, to wear shorts or trousers…etc. It is a covering. But the essence and the body are there". A8

The researcher, found this generally acceptable among architects, as elevations may be overlooked as a key element, especially if the client does not show interest. In other words, design conflict was not conceived of as an issue (see Al-Naim (2008: 141)), although poor house designs were:

> "We have some houses with poor elevation designs, so I try to fix it". A10

Conversely, some architects demonstrated certain additional efforts when designing the elevations. Some thought of it as a natural consequence of the house's design:

> "It is the layout that will influence the exterior elevation". A7

> "When I draw up the plans, I feel the elevation has formed. Few people discuss elevations early in the process". A6

Nevertheless, elevation and designs mostly follow clients' demands:

> "Our style in the office, is the client's style, this is our objective". A5,

> "I have to do what style they are asking for". A10

This is true with most architectural offices, and is justified by explaining the business aspect of the practice and that the ultimate aim is profitability, even if this means poorly proportioned or unsatisfactory results. A4 gave an example of this argument:

> "I had an image in my mind for a particular house, I said it must look like this [modern]. Then after completing 90% of the plans, I was shocked by the owner and

his wife bringing me pictures of Roman and Spanish arches and cornices… I thought what is happening! So I withdrew and transferred them to one of my architects to finish the designs with him". A4

A few examples, however, show coherence between the interior and exterior concept and style. One such example was presented by D1 in a recent development project, the other was H1's house (Figure 4.41). The design reflected an eastern-Arabian layout and style in and out; the owner also is planning to extend the same concept in the interior design and furniture. Although architect (A2) designed every aspect, he did so in compliance with H1's requests. Nevertheless, it takes good architectural skills to truly obtain and understand clients' needs, as mentioned earlier in section (T2) 5.

Figure 4.41 H1's house with an eastern-Arabian concept and style, designed by A2

A noteworthy point is that the same architect (A2) designed another house with a modern layout but a traditional regional exterior style (Figure 4.42). This demonstrated the influence of clients on the selection of designs.

Figure 4.42 Traditional regional exterior design for a modern house layout (A2)

(T2) 8.2 Styles in Saudi houses

A collage of styles can be identified when investigating Saudi architecture, especially, residential architecture. In SA, when you discuss the subject of a buildings' style, you are usually referring to the design of the buildings' exterior. Table 4-2 illustrates examples of the styles identified in the researcher's investigation.

Table 4-2 Styles identified in Saudi houses

Style	Islamic	Regional	Moroccan/Spanish/ Mediterranean
Examples	 	 	 
Style	**Classic**	**Modern**	**Eclectic**
Examples	 	 	 

Although common style types are used to describe design selections, the majority of houses labelled with a specific style represented a somewhat *eclectic* style. Figure 4.43 shows an example of a contemporary house with an array of design features drawn from different styles, e.g. Roman, Mediterranean and French.

Figure 4.43 An eclectic design in a house's main elevations

Generally speaking, arches framing windows and at main entrances, high columns with roman capitals and French iron gates are some of the common features found in many contemporary Saudi houses Figure 4.44.

Figure 4.44 Common features in houses' elevations

A remarkable finding also, was that many people, i.e. without a design background, used adjectives to describe styles instead of international style terminologies. For example, they say a 'crowded/busy' style to describe classical designs with many details and features, or 'simple design' referring to the modern style:

> "One wife, preferred busy crowded designs". A10

On the other hand, the term ‘modern’ is usually an indication of ‘contemporary’ or new designs, not the Modernist school of design. This was noted by the researcher during conversations with both, homeowners and some architects, and confirmed by A2.

Clients come and ask for a modern home, but in fact, they mean a contemporary design with classical features. Furthermore, these clients actually perceive modern designs to be ‘plain, empty’ designs (in oppose to busy designs):

> “What is recognised as simple lines/forms by one person is plain/empty to another so we need to add more things”. A2

In terms of ‘modern’ styling in Saudi houses, this is still not widely acceptable as it lacks the luxurious appeal people favour. However, it is growing steadily in popularity especially through new developments.

> “The pure modern is not available here and is still not accepted by Saudis”. A9

> “There are more people requesting modern designs, I noticed this change”. A11

This was supported by the decrease in house sizes, as classical designs looked to be too heavy on smaller houses unlike modern designs (Figure 4.45). In addition, the influence of travelling, which has increased dramatically in the past decade, and staying in hotels that have mainly adopted modernised styles attracts people’s interest and is reflected in their houses.

> “They [prospective buyers of D2 ultra-modern development] immediately say, ooh I love it! It reminds me of ‘X’ hotel”. D2

Figure 4.45 Two different development styles (modern and classic) by the same developer
Source: Villa Saraya 2013

(T2) 8.3 Saudi regional designs

In traditional settings, Saudi buildings were characterised by distinctive concepts and styles, according to their geographical location (see section 2. 14 and Figure 2.14). However, this is in the past; today only rare examples reflect traditional regional designs. When tradition is adapted, features are copied and pasted to elevations with very little creativity and hardly any functionality. These designs, although they do not have practical use, usually do have some meaning to the individuals who request them.

Traditional/regional designs are perceived as old, out-of-date styles. Many considered it a style suitable for museums not houses.

> "We try to make clients aware of the Saudi environment and…and…but he will say NO, no this is museum work I want classical, or French". A2

> "I don't like the traditional style, and even if I do my children will not. From the outside it [the house] will look like a museum". H2

In view of this, the question arises: why are regional styles perceived as old and out-of-date when it comes to selecting a house style? Many factors may have influenced this attitude, however, the researcher concluded one of the causes that might have triggered this was the sudden introduction of advanced architectural systems. New architectural materials and technologies provided simple alternatives to high-maintenance traditional systems, especially with adobe buildings (less so in stone buildings found in the southern region of SA).

Another aspect that helped motivate the use of foreign styles, opposed to regional ones, was that unlike design-concepts, style did not interfere with socio-cultural requirements as it was perceived as having an aesthetic envelope. Therefore, cultural restrictions are limited, offering an opportunity to show variations and uniqueness.

The interviewees also mentioned additional reasons preventing people from selecting regional designs. These were:

1. The search for luxury, which is lacking in the regional designs available (especially using the same sources and costs of other styles):

> "Classic is the mostly common style because luxury is an important point to people". A2

2. Wanting to reflect a modern or up-to-date appearance.

3. Feeling bored by the repetitive and conventional approaches used to replicate or reproduce old regional designs:

> "Even in Riyadh they say we are bored of the 'Najdi' style [Riyadh's regional style] and this is like 'Rasim Badran's work [famous for his developed Najdi style] and we are bored of it...Even architects are only copying the same forms". A2

4. The lack of innovative examples in present projects. This dissuades people from considering regional designs, as it makes it difficult for them to see any creative or innovative potential in them, i.e. functional and useful designs with an appealing look that conforms to today's needs from houses.

5. The relatively high cost associated with high standard regional designs. According to A5:

> "Materials required for regional designs are available but the cost is incomparable with standard finishing materials. It cost around 175 SR/m^2 for a traditional profile, whereas it only costs 25-35 SR/m^2 for standard contemporary profiles". A5

6. The high maintenance demanded by regional designs, because they consist of many details that are difficult to clean and materials requiring regular maintenance, e.g. wood.

On the other hand, many people, especially in recent years, have started showing an interest in their traditional regional artefacts. This interest is represented by creating display corners in their homes, or having a complete room replicating a traditional setting. Usually these rooms have a casual use, e.g. the molhaq space (Figure 4.46) (see section (T1) 2.1, point: 4).

Figure 4.46 Traditional regional design used in a molhaq

According to all the architects interviewed, few clients choose to have traditional elements incorporated into their house designs. Some architects used traditional features in commercial buildings or mosques only; i.e. not in residential projects.

The impression gained by the researcher was that it would be out of the ordinary for an architect to approach a design using regional features without being directed to do so by the client. Business factors play a significant role in this phenomenon. Architectural offices in the region, even reputable ones, work on a commercial basis, meaning that they are unwilling to compromise their careers and incomes on something that may or may not benefit them. As a result, they follow the norm, even if it does not fulfil their ambitions as creative and responsible architects.

Moreover, recently, regional designs have been forced by Municipalities onto some commercial building projects in specific locations. This is to create thematic designs and sustain a sense of local identity. This direction may play a role in reigniting people's interest in traditional artefacts and architecture, if and when, thoughtful designs are created.

The norm when attempting to design a building with a regional design is to replicate traditional local features and impose these on the contemporary structural form. The alternative is to develop a mix of regional and Islamic architectural features, this approach alludes to the wide range of references on prominent Islamic architecture compares to the low volume of publications on local architecture, which lack the depth required in professional architectural, i.e. will mostly be demonstrative images/photographs with some temporal historical background given. Whereas, professionals in the field of architecture require detailed illustrations and in-depth contextual explanations of not only the artefact under study, but also the socio-cultural contexts it was developed and utilised within.

(T2) 8.4 Selecting a style

Although the findings demonstrate style to be a reflection of taste, the question 'what influences style selection decisions?' remains unanswered. If hypothetically, two people have similar taste, this does not mean they will select similar styles. The following points were identified as factors influencing style selection in the Saudi residential context:

1. The contemporaneous nature of a style can be linked to trend. Every few years, new themes become HD trends. Some people deliberately initiate change, while more conservative and cautious people wait until an innovation becomes widespread before adopting it.

2. Familiarity is also a factor, and may be linked to the point above. Although people want to be unique, the majority do not want to be completely outside of the norm.
3. The influence of grand houses is strong, as they represent luxury and often have unique features.
4. The cost of a design along with the cost of the materials associated with it has a strong impact on selecting one's elevation design/style.
5. The influence of architects/designers' recommendations.
6. The influence of a social group.
7. Education background.
8. Living abroad, as in experiencing other style contexts and ideologies.
9. Travelling and exploring foreign styles.
10. Weak knowledge of style options and methods for adapting different styles. People prefer to select something they have experienced rather than something they can only imagine, which is a skill not everyone is capable of. What is noteworthy here is that the spread of a 3D design shows a house's details in a clear easily readable format, this has helped architects to convince clients about different ideas and was confirmed by most of the architects interviewed.
11. Not having to link the design of houses exteriors to socio-cultural requirements, i.e. more freedom of choice.
12. Architects and developers select styles that are easier to market and turn a higher profit.
13. Influence of media i.e. television, internet and magazines/books.
14. Older children play a role in the selection process of style/s.
15. Experience continued from a previous residence, i.e. a person will opt out of concepts or styles that have caused him/her some kind of discomfort in the past, while remaining attached to styles they appreciate.

(T2) 9. Impediments (issues) facing the development of HD practices

The following list illustrates the impediments and issues affecting Saudi's residential architecture practices, as identified by analysing the data:

(T2) 9.1 Organising bodies related issues

1. Constantly changing regulations, and weak announcement and awareness system;
2. Variations in regulations between Saudi regions;
3. Regulations not in line with residential socio-cultural or Islamic requirements;

4. Poor public engagement in decision making process;
5. Lack of specialised employees in certain organising jobs, and shortage in the number of building inspectors;
6. Issues caused by not implementing building codes;
7. Insignificant penalties against building regulations violations;
8. Poor public awareness and educational systems about architectural design and construction;
9. Lack of any building/builders/labour organisation;
10. Lack of residential developers organisation;
11. Not implementing engineering offices' ranking systems properly;
12. Issues resulting from the high number of changes in building types, e.g. from residential to commercial or from single dwelling to multiple;
13. The lack of detailed researches and statistics about residential variables;
14. Demoting old neighbourhoods' status, by allowing certain changes and discouraging continuous use by existing homeowners.
15. Poor site developments, promoting a standard residence form, i.e. no variations in residence status in the same area;
16. Fixed setbacks reducing plot use and constraining design options;
17. Unbalanced service distribution between and within neighbourhoods; and
18. Enforcing the use of regional styles without providing methods for evaluating outcomes

(T2) 9.2 Practicing body related issues

1. Poor evaluation of own practice and consequently a lack of development;
2. Unclear design processes;
3. Architectural/design offices with limited specialities relying on part-time/subcontracted employees;
4. Relying on foreign architects with limited local socio-cultural or architectural knowledge;
5. Poor building cost estimations;
6. Difficulty accessing design resources;
7. Poor use of design resources;
8. Lack of regional design references and innovative contemporary regional designs that can be used as references;
9. Difficulties introducing new concepts/styles;
10. Lack of time required to produce high quality designs, while keeping cost standards set;
11. Low cost offices that produce below average designs;
12. Shortage in professional residential developers; and

13. Poor quality buildings.

(T2) 9.3 General issues

1. Rapid changes in lifestyles unaccompanied by a similar rapidity of residential development;
2. Clients' poor knowledge of architecture and associated elements;
3. Poor future planning when designing one's own house;
4. Poor academic involvement in architectural organisation and practice;
5. Lack of published guides demonstrating products and materials types, specifications and sources;
6. Lack of qualified labourers; and
7. The huge number of poorly designed houses and buildings, which strongly influences the direction of future architecture.

(T2) 10. Future improvements and suggested solutions

No doubt, solving or minimising the issues listed above demands a simplified approach towards improving residential architectural design in SA. However, in this category, the objective is to demonstrate improvements and solutions as suggested by data sources, i.e. mainly the interview participants:

1. Introducing a 'Ministry of works' to manage the jobs shared between different governmental institutions;
2. Offering some flexibility in building regulations;
3. Enforcing all residential projects by employing a project supervisor independent of the contractor;
4. Implementing neighbourhood centres and improving their roles;
5. Developing a database of accredited engineers (includes architects);
6. Developing a system for accrediting craftsmen/builders;
7. Improving architectural design fee standards;
8. Developing an accessible resource for regional designs;
9. Architectural exhibitions that demonstrate examples of projects that have adapted traditional features to suit contemporary methods;
10. Supporting local architecture/architects with the necessary finances, experience, time and technology;

11. Increasing public awareness about architecture and related subjects, and promoting regional designs and their application methods;
12. Involving media to promote public awareness;
13. Maintaining and reusing old buildings;
14. Being more creative with new buildings; and
15. Developing neighbourhoods based on Islamic regulations to set an example.

(T2) 11. House design future

The perspective of the participants interviewed, on the future of residential architecture can be divided into certain areas. A few respondents believed that HDs would remain similar and follow the same form and volume built today. Whereas, observation of the facts and the majority view of the interviewees was that developments would take over privately built houses, as they are definitely reducing in size, and becoming less complex in their layouts, i.e. more open planned offering further flexibility. They also anticipated that:

> "The direction is towards vertical architecture, due to the increase in infrastructure costs". A4

> "Design prices will rise". A9

> "There will be very unique designs, because even developers now are putting a lot of focus on their designs, they are not doing just one design". A10

> "It is developing very well; people come knowing what they want". A11

4. 3 Supporting Categories in the HD Phenomena

During the investigation of HD in SA and the incorporated socio-cultural phenomena, other subjects and points were raised in order to help link, compare and define the main properties researched. These other supporting issues can be distributed into the following six categories:

1. Interior-design and furnishing;
2. Residential construction and beyond;
3. House-development projects;
4. House buying;
5. Housing projects (compounds); and
6. Architectural studies and education.

Although some extensive data has been gathered pertaining to most of these categories, only a brief explanation of each category has been presented in this context; the aim being to demonstrate its existence and relevance to the study, while maintaining focus on the main research subject. Each category can be extended and examined separately in the future.

4.3.1 Interior-design and furnishing

Professional interior design offices have become common in recent years. Establishing a number of interior design and interior architecture departments at universities mainly for females has promoted this spread in interior design practice. Prior to this, decorating and custom furniture shops dominated this area, but with less professionalism and much less awareness and appreciation of the profession by the general public.

Today, many architectural offices have an interior design department. This can help them to obtain more business, as well as providing an enhanced service to clients, as having a project architecturally and internally designed by the same group can be easier and helps avoid unwanted architectural features that may hinder interior design ideas. Conversely, many interior design offices conduct architectural design projects by preparing design layouts, and then subcontracting them to an architectural office, which completes the structural and technical elements. Some interior design offices take on contracts and apply their designs using their own craftsmen or by subcontracting work under their supervision. This ensures better application of their designs.

During the investigation two approaches were noticed, one, separated the task between the architectural and interior design completely, while the other found that integrating the two in helped deliver better design outcomes and a clearer process, since their work is complementary. Furniture, on the other hand, differs in terms of preferences, as some people prefer custom-made furniture, which includes sofas, beds, closets and curtains. The objective behind this is to take on more freedom in the selection, and/or to obtain the desired styles at lower cost, as some custom-made furniture can cost much less than imported furniture. Other people prefer readymade furniture, which varies. A rapidly growing norm is to travel and buy finishing materials, furnishings and fixtures, e.g. floorings, doors, bathroom units and light fixtures from China.

Designing and decorating houses demonstrates a higher socio-cultural phenomenon than that demonstrated by the architectural design process, that is to say that social interaction between

family members is far more intense and consumes much more time, as socio-cultural customs are represented in further detail in reference to products and furniture selection and design.

4.3.2 Residential construction and beyond

Hiring a contractor can be more stressful than selecting an architect. The lack of any organising body for builders/contractors does not help resolve this phenomenon. Many poorly presented housing projects are a result of inferior and unqualified workmanship and not weaknesses in the designs themselves.

Building materials can be provided by the homeowner or the contractor during the skeleton phase, i.e. after the construction of the main structure and partition walls. Contractors may also provide materials for the finishing phase as well, this method is literally translated as 'key handing', signifying the process where the contractor caries out all building tasks from plot excavation to completion as he submits the house key to the owner. Nevertheless, this method is often used with investment projects rather than private/personal house projects.

Most people will be unaware about the building process and will find it overwhelming. However, assigning a project supervisor through an architectural office, who charges by site-visit or a monthly fee or by project, is a growing phenomenon to assure building quality, he can also offer a management of the process; nevertheless, project management in privately built houses is not common in SA.

Moreover, findings from the research show that architects rarely follow up on their house designs when they are constructed. An architect mentioned that on some occasions, he would not mention a certain house was designed by him, because the design has been altered so much during construction in a disappointing way.

4.3.3 House-development projects

Residential developments may include any type of accommodation, however, in this brief statement the focus is on houses, i.e. detached or semi-detached. The phenomenon of residential developments as it applies today appeared in SA just over a decade ago.

Developers themselves vary between being individuals building as few as two houses at a time, to companies investing multi-millions of SRs in hundreds of units per year, nonetheless, it is yet to be considered a mature practice, and there are many issues accompanying it. The most common aim on house developments is to design one to three layouts (prototypes), i.e.

depending on the overall development size, then design up to three different elevations/themes for each layout to differentiate between the units (Figure 4.47). Initially only variations in the colours of façades were applied, but this did not appeal to prospective buyers, since people were still attached to the self-built house concept, which offered a unique design for each house. Nevertheless, many people remain reluctant to consider buying development houses because of their matching designs.

During the field investigation and discussion phase, many links were identified between development projects and self-built houses. Residential development processes and designs were influenced by self-built houses and vice-versa, i.e. self-built houses were affected by the concept of residential developments. This is because such developments are relatively new, therefore acting as an extension of self-built houses and sharing many properties.

Although residential developments have proven successful in terms of saleability and achievement of very high profits, developers have shown apprehension about future projects. They aim to be cautious when suggesting new ideas, but also try to be creative and develop a product that stands out from their competitors.

One of the approaches many developers adopt, to extend on the concept of self-built houses, is the provision of additional freedoms when selecting finishes for clients who have purchased the houses in the early stages. Some developers may even give the buyer the opportunity to alter the layout as long as it is done at the construction stage. One developer has gone beyond this to actually sell unfinished houses; marketing this as a more flexible option for buyers, because they can complete them independently and have flexibility selecting whatever materials they prefer and managing the timescale and budget themselves. This approach is not only driven by a marketing perspective, but also offers a means to transfer people's preferences from self-built houses to ready-built developments.

Figure 4.47 Two development layout prototypes with three different elevations for each one (by A3)

Another approach in the designs of developments is intended to attract a wider audience by the designing of flexible layouts. In such instances, the ground floor is designed to offer different possibilities, it may be open-plan or divided with walls or sliding doors. In addition, the number of bedrooms may vary from between two and five, depending on the placement of partition walls and if the owners want a first floor open living space or prefer a closed room. That said, not all house-buyers have the ability or desire to conduct building work, after all, this is one of the main reasons behind choosing to buy rather than to build.

It is also worth mentioning that marketing development projects is an idea highlighted by developers, as there is shortage of professionals specialised in producing developments/house

marketing in the region. According to most developers, the lack of data/statistics about home seekers' preferences and other related data has created obstructions against identifying market needs.

4.3.4 House buying

A growing approach to home ownership is to buy ready built homes from developers. Whether completely finished or finished to a client's requirements, it is not an easy selection process. The terms 'commercial build' and 'personal build' are often used to describe a house that is offered for sale, the first indicates a low quality build that has been done quickly and cheaply, purely for investment, while the second indicates that greater attention has been paid to quality, since the objective was personal use. Consequently, houses built for personal use are more sought after, but less common and may be higher in price.

Perceptually, people's lifestyle determines how spaces are laid out; however, when purchasing a ready-built house, this does not apply. People in such cases either adapt their lifestyle to the slight differences (slight, because at the end they do choose a house that mostly meets their needs), or where possible alter the spaces to suit their needs. Nevertheless, examples studied show that house buyers carry out both of the above tasks; i.e. adapt to some criteria and alter others.

Searching for a house may take years and cost is an essential criterion affecting decision-making. A common phenomenon is to use bank loans when buying houses. Bank loans can cover all or part of the cost, with fixed or changing interest rates of ±4 per cent/year. Nevertheless, a number of criteria need to be met in order to gain a bank loan, for instant, the house should not be older than twenty years (less with some banks), and only some banks offer loans to unfinished houses. The loan itself is calculated based on the person's age, retirement date and monthly income, plus other conditions. The loan should be covered in a maximum of 20-30 years and paid using monthly instalments not exceeding 45 per cent of the monthly income, additionally; more than one person can cooperate in paying the loan held against the same property.

There is also a government interest-free loan scheme i.e. REDF (Real Estate Development Fund) that is worth 500.000 SR. This allows certain individuals to buy or build a property; however, there is a very long waiting list for such loans, of over 10 years. Other large companies (mainly industrial) offer employees large interest-free loans to buy or build houses, these are often a key target for developers.

4.3.5 Housing projects (compounds)

Housing projects, sometimes called compounds, incorporate a large number of accommodation units (houses and/or flats) 200-5000 units, all grouped around a single large boundary wall offering self-contained facilities, e.g. grocery shop, sport centre and in larger ones, schools. They are often designed to accommodate employees from a specific institution; however, some more sophisticated compounds are for renting out.

The architects interviewed describe their design/building process as 'different' from that employed in other residential projects. The architect may be selected by the client through a tender process, which has certain quality assurance conditions, e.g. prior equivalent experience in designing similar projects. Meanwhile location is a vital criterion in some development projects, although this is not the case with large housing projects. On the contrary, land on the outskirts of cities are sought after for their relatively lower cost, this is because such projects are not intended for investment purposes.

In terms of design, some clients will have their own architectural departments, which will provide a program and basic details, whereas others will work with the architect through a representative. The focus on designs is intended to make the build as cost efficient as possible by avoiding addition of unnecessary features, e.g. double garage space, decorative elements and outdoor barbeque units. For construction, lighting structures are used to support the cost efficiency aspect.

4.3.6 Architectural studies and education

There is much to discuss concerning this subject, as academic influence on the movement of architectural designs is important. However, the scope of such research does not permit an extensive explanation. Architectural education in SA has developed widely, with both genders involved in its development. Awareness and appreciation of the field has increased significantly through many architectural and design related disciplines at Saudi universities.

In brief, although there has been a great impact from architectural related disciplines, these have not embraced regional architecture in its profound context to an extent that matches its development. Part of this is due to the dependence on foreign academics and imported curriculums (mostly Western/American) in local universities, especially in earlier periods. Another reason is professionals' enthusiasm for modern and contemporary movements, which helps suppress traditional and regional designs, concept and theories and labels anything from the past as 'old' and subject to conservation projects. This attitude drives the dismissal of Saudi

socio-cultural phenomena and variables affecting design studies and processes, as essential criteria.

Nevertheless, some design attempts for academic purposes have employed traditional/regional concepts that were identified during the investigation as mainly driven by students, i.e. Saudi students. This demonstrates that some interests advocating traditional/regional designs even among young people; however, they remain as on-paper projects for academic use.

Academia is a place where traditional and regional designs can be developed in a contemporary successful and appealing manner, as is evident in students' projects and academic researches appreciated at many national and regional events. Architects with academic teaching background also reflected this as their work showed a better standard than those with less academic interest. Nonetheless, academic work needs to go a step further in practice. This will only happen if education has a true impact on architectural practice in general and residential design in particular.

4. 4 Summary of findings

In this chapter, the constituents of Saudi residential architectural design were identified and a thoroughly explained and argued. All the findings were based and grounded on the gathered data. The vast majority of data was obtained from field investigations and the interviews carried out during them. Quotations from the interviews that directly related to a concept were integrated in the explanation to support and reference some of the findings.

The research findings were divided into two main sections, first, findings related to the socio-cultural phenomena and concepts linked to Saudi HD i.e. (Theme 1). Second, findings that explained and demonstrated phenomena and features linked to practical aspects of HD, i.e. (Theme 2). Finally, supportive categories that are indirectly related to the design of privately built houses were briefly mentioned and explained towards the end of the.

The findings in this chapter are developed to produce the research outcomes, which are explained and presented in the following chapter.

Chapter 5
House Design in SA: Research Outcomes

5. 1 Introduction

In this chapter, the research *outcomes* are presented. The findings from the different sources including the data obtained from two field studies, which were thoroughly analysed in accordance with the grounded theory methods, are integrated here, and as a result three forms of outcomes were generated:

1. A structure demonstrating the conceptual constituents of the residential design process and the incorporated socio-cultural phenomena and concepts (section 5. 2);
2. A conceptual model explaining the relationships between the categories constituting the phenomenon of designing privately built houses in SA (section 5. 3); and
3. A substantive theoretical explanation of the phenomenon presented in the above conceptual model (section 5. 4).

In order to reach the final theoretical presentation of the examined phenomenon, findings are first grouped under two structural diagrams in which each diagram represents one of the generated themes used to describe Saudi residential architectural design in Chapter 4. Following this, the relationships between the themes and their components are established and integrated into one conceptual model. The model represents the subject about 'designing houses in SA and the incorporated socio-culture', which is subsequently explained in the following section in the form of a substantive theoretical explanation.

5. 2 Categories in Saudi residential architecture

Figure 5.1 shows the broad structure of the Saudi residential design phenomenon, whilst the diagrams in (Figure 5.2) and (Figure 5.3) describe the components of the structure in more detail. Each diagram shows a theme's structure in an order similar to how they were previously explained (in Chapter 4).

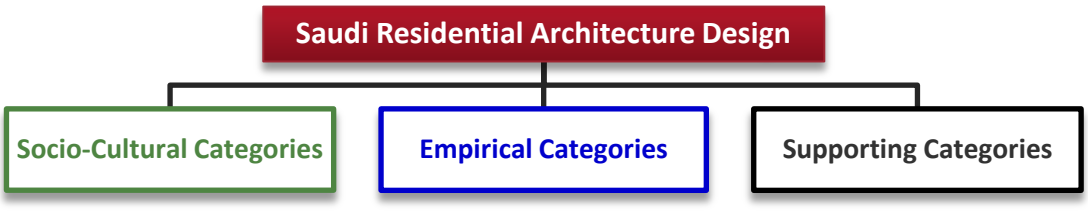


Figure 5.1 The broad structure of SA's residential design

The result of this structuring process is beneficial for developments presented in this research (Chapter 6) and for other future relevant studies, as follows:

1. Firstly, the structures are to support the theoretical integration process presented in this chapter; this was by identifying the relationships between the categories and organising them into the conceptual model.
2. The structures also offers a holistic representation of the categories found in the designs of residential architecture in SA. The holistic structure should have the capacity to include any unmentioned or unidentified concepts and phenomena from this investigation or any emerging new ones. In other words, any concept other than the ones already identified should fit under one (or more) of the presented categories.
3. It is expected that the structures generated may be utilised in the future by adapting them into other focused research from relevant fields. They may act as a data source or some of the relations between categories or concepts may be examined as part of a focused study. Alternatively, a future study may aim to extend and further develop the content of these structures by adding different dimension, for example, sustainability.

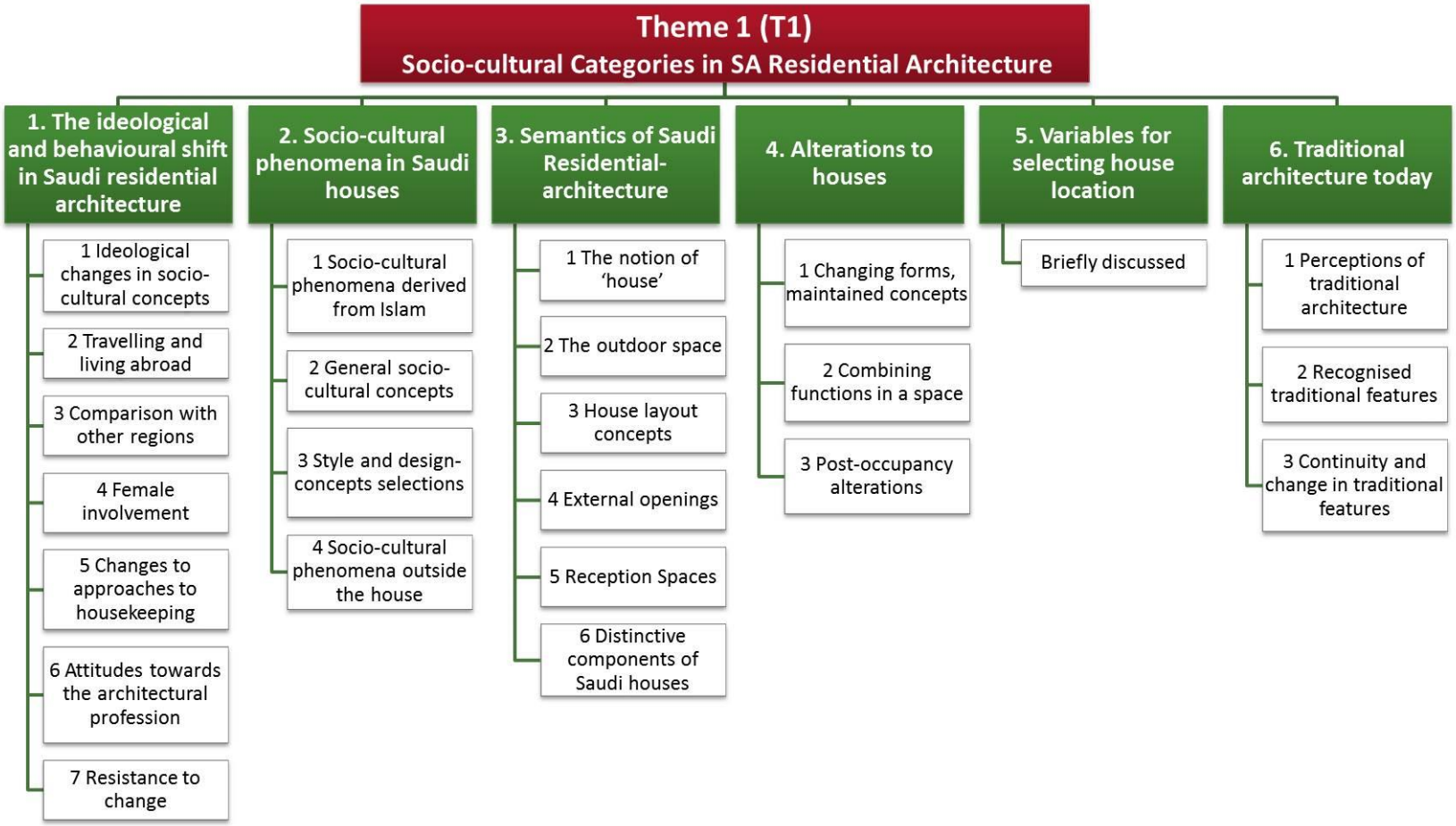


Figure 5.2 Saudi residential design: Theme 1 structure

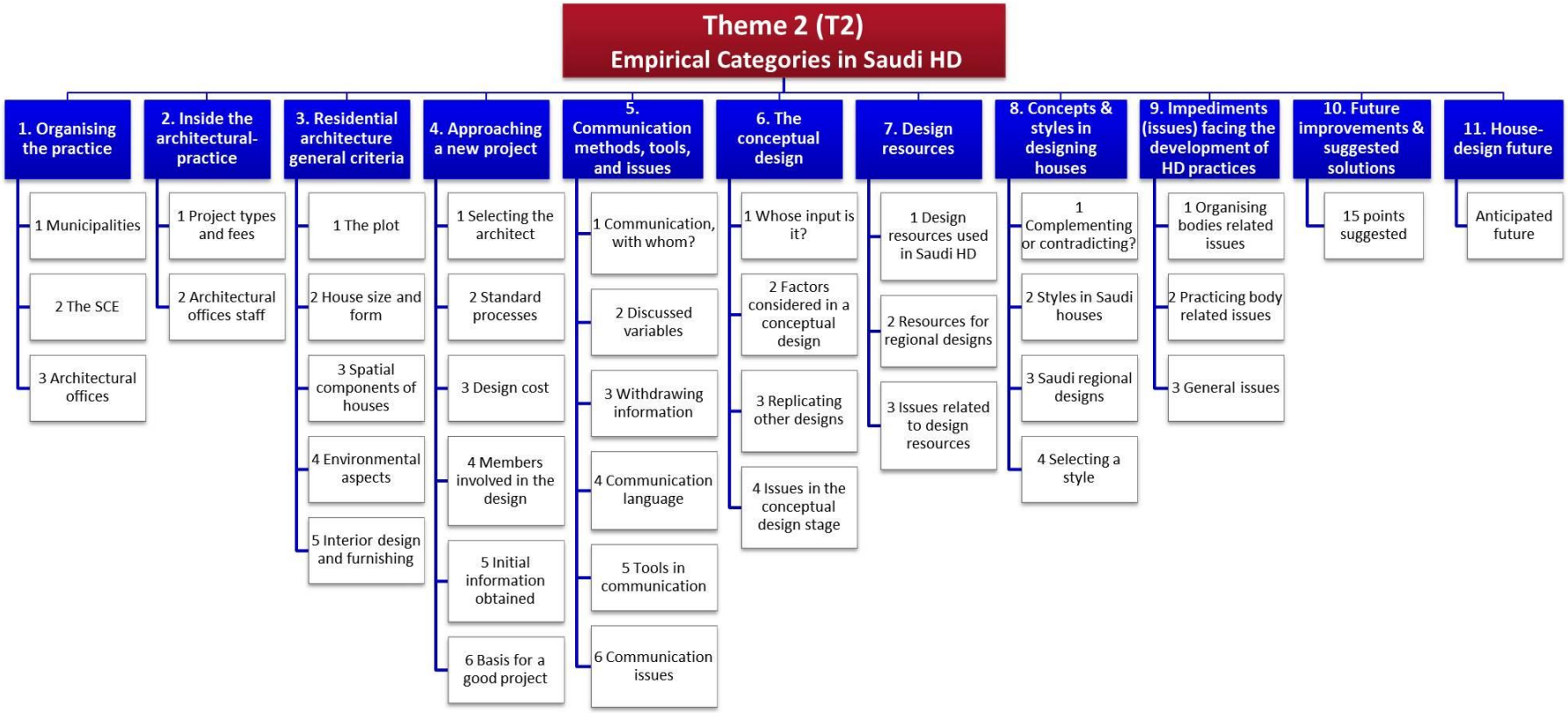


Figure 5.3 Saudi residential design: Theme 2 structure

5. 3 The conceptual model of designing houses in SA

Initially, to form the model, cuts were made in the structure of the themes (Figure 5.2 and Figure 5.3). The categories and sub-categories were thoroughly examined in terms of their criteria and the types of relationships between them. They were then structured and restructured accordingly until a satisfactory model was formed. Figure 5.4 shows an example of this process.

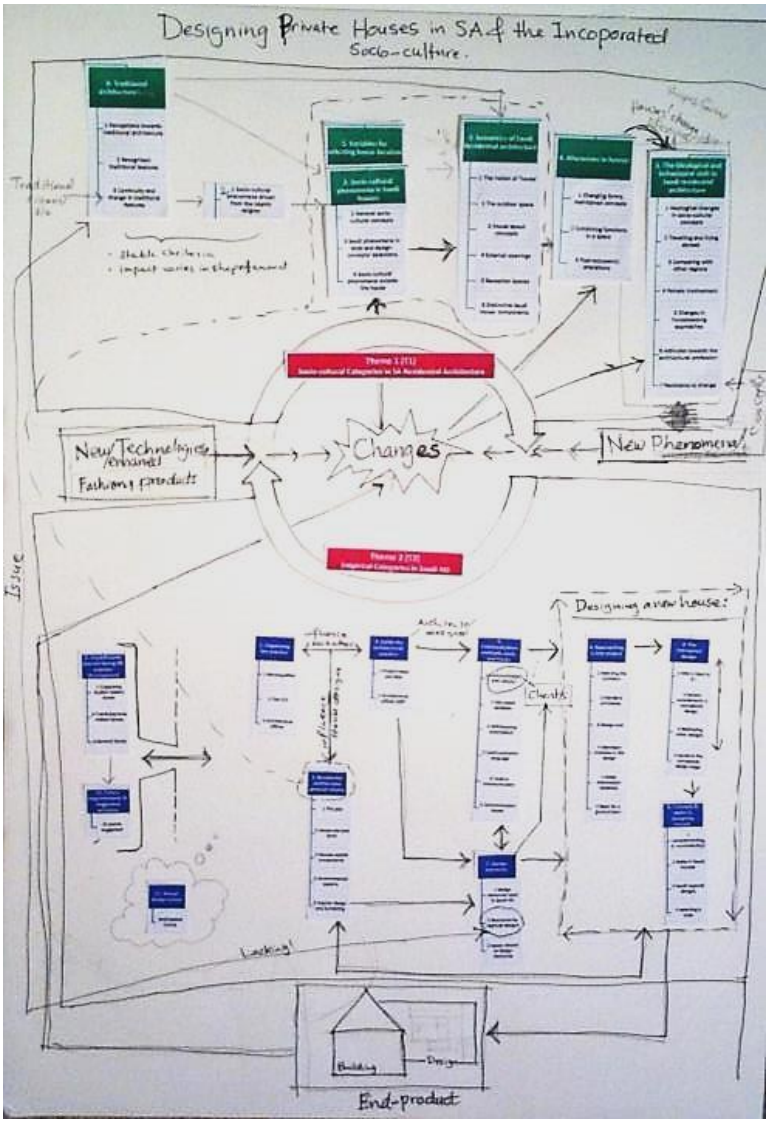


Figure 5.4 Theory generation process

Following a number of restructuring attempts, the final conceptual model of designing houses in SA was formulated (Figure 5.5). Figure 5.6 provides an additional but more general representation of the model. The conceptual model is then explained theoretically in the following section (5. 4).

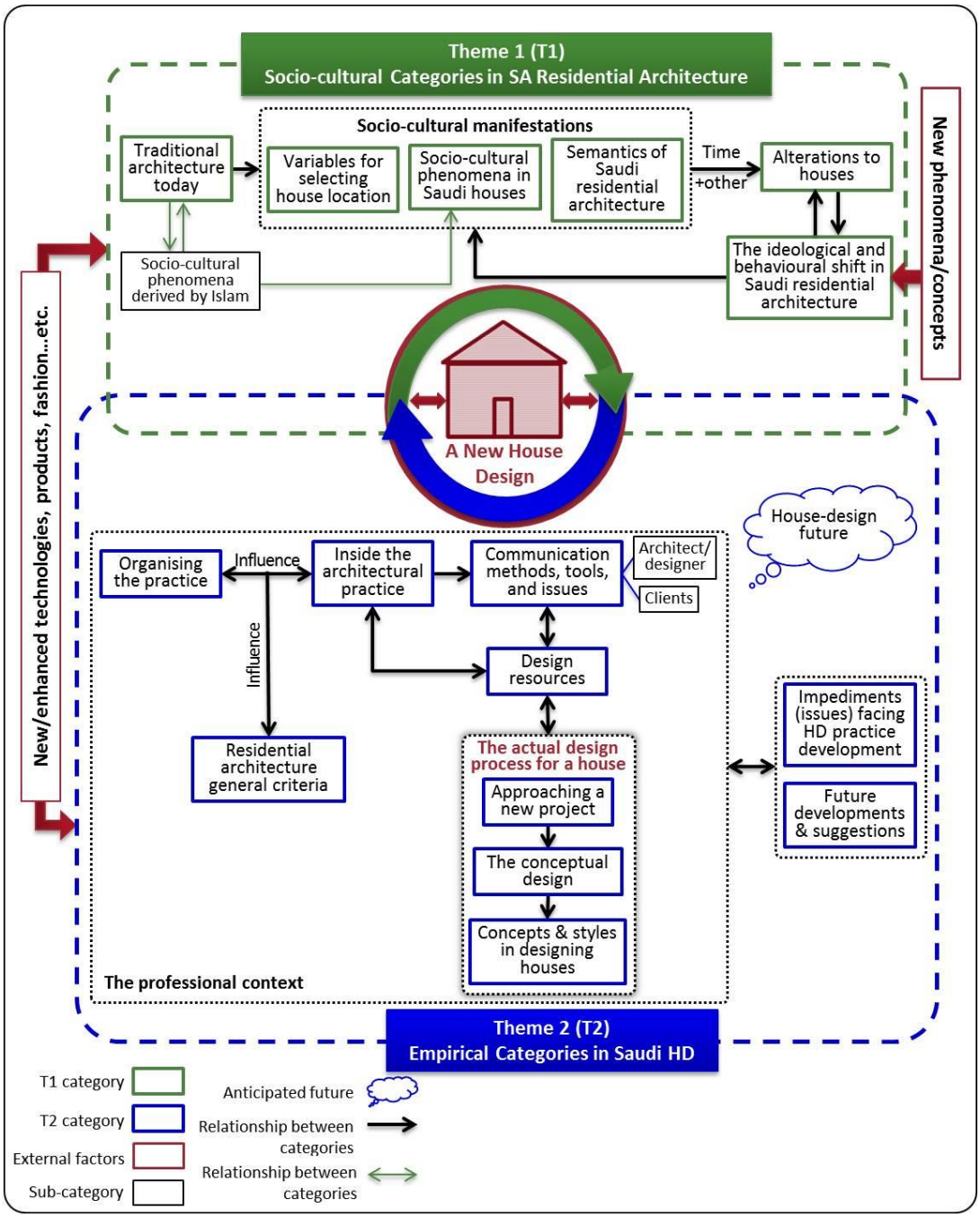


Figure 5.5 The conceptual model of '*house design in SA and the incorporated socio-culture*'

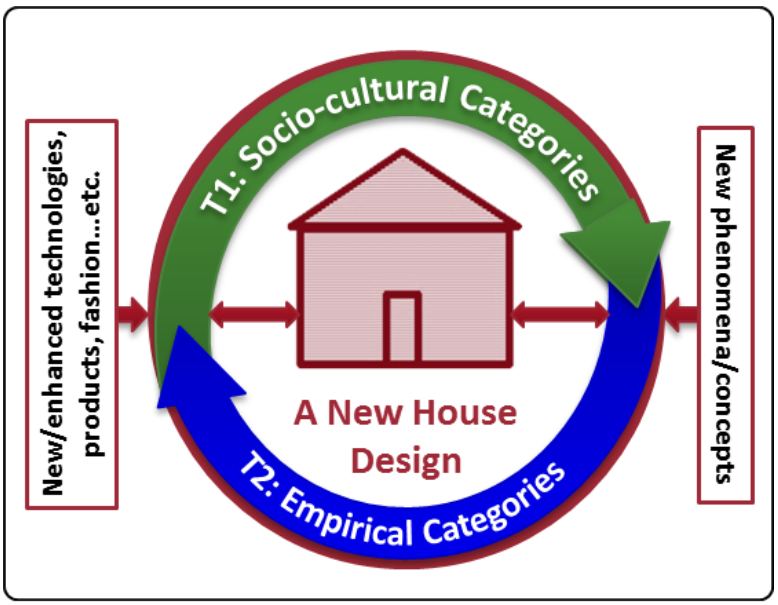


Figure 5.6 A brief conceptual model of: 'Saudi house design'

5. 4 The substantive theoretical explanation of 'house design in SA'

> 'This is an inductive method of theory development. To make theoretical sense of so much diversity in his data, the analyst is forced to develop ideas on a level of generality higher in conceptual abstraction than the qualitative material being analyzed… To master his data, he is forced to engage in reduction of terminology. If the analyst starts with raw data, he will end up initially with a substantive theory for the substantive area on which he has done research'. (Glaser and Strauss 2008: 114)

Strauss and Corbin (1998: 15) define a theory as "a set of well-developed concepts related through statements of relationship, which together constitute an integrated framework that can be used to explain or predict phenomena". Additionally, Birks and Mills (2011: 176) state that a theory is "an explanatory scheme comprising a set of concepts related to each other through logical patterns of connectivity". What is presented here, however, is further detailed than what could be defined as a theory (for the reasons explained in section 3.2.2), therefore, it is referred to as a theoretical explanation instead. Nevertheless, the process and the substantive level (section 3.2.4) of representation still applies, on the basis that "if the analyst starts with raw data, he will end up initially with a substantive theory for the substantive area on which he has done research" (Glaser and Strauss 2008: 114).

5.4.1 The bases for developing the theoretical explanation

In developing the theory, the researcher adhered to the recommendations found in GTR methods. In them, researchers are advised to avoid the application of external theories until developing their own theory (Birks and Mills 2011; Glaser and Strauss 2008). This is to prevent the influence of external codes, as they may lead to the researcher forcing the inductively developed theory to conform to those external codes/theories. Otherwise, the researcher will be delimited to his/her analysis findings "then able to go on to position their theory in the context of broader disciplinary knowledge" (Birks and Mills 2011: 125).

The "presentation of a clear, integrated theory that draws the reader in and provides evidence of logical conclusions and their relationship to the data is seen…as the key element of a credible grounded theory" (Birks and Mills 2011: 149). In this statement, the criteria of a credible grounded theory are presented, namely:

1. A clear theory;
2. An integrated theory;
3. A theory that draws the reader in;
4. Conclusions are made logical through evidence;
5. Conclusions are related to data.

Moreover, Glaser and Strauss (2008: 237) stress that a practical grounded theory should have at least four interrelated properties:

1. It should *fit* the substantive field in which it will be applied;
2. It should be *understandable* by members working in its area;
3. It should be *general* enough to enable it to be used in a variety of situations within the substantive area;
4. The theory should also provide its user with some *control* to adhere to daily situations and changes.

All the above criteria were considered and used as a guide and an essential basis for the development of the theoretical explanation to ensure the formation of a valuable, credible and practical outcome.

5.4.2 An approach to the developed theory

A substantive explanation of the phenomenon of designing privately built houses in SA was ultimately developed. This was described by Glaser and Strauss (2008), the founders of GTR in 1967, as a 'discovery' process rather than a theory-generating or development process. The examination of the research subject revealed that it is an interlinked process of design and social manifestation. *The process of HD in SA is indeed a socio-cultural phenomenon in terms of not only design components and concepts but also the overall experience, including the architectural practice itself.*

Nevertheless, a number of other areas influence the process of HD in SA. These areas were acknowledged during the investigation but were not treated as key elements (see 4. 3 for further details). Environmental, geographical and economic conditions are included in these influential areas, in addition to planning and building legislation, which in many cases were influenced by socio-cultural conditions and were shaped to adhere to them.

Changes and alterations to the process and properties of design are mainly triggered by evolving technologies and material and product development. These have a significant impact on both the HD process and also design outcomes.

In this research, 17 major categories of residential architectural design in SA were identified in addition to six other supporting categories. These categories and the generated theoretical explanation (described below) were used to address the research objectives and questions listed in Section 1. 2. Eleven categories explained the settings and conditions underpinning architectural design practice and its structure and management. The criteria of residential architecture and the influences on their forms and design concepts and styles were examined. The categories were also used to describe the design processes, the people involved in it and the communication methods employed, as well as the design resources used, by whom and for what reasons. This is in addition to the stages through which a HD project passes. The categories were also used to present the issues faced by the people involved and the causes of these issues. People's future anticipations of residential architecture, particularly HD, were also examined.

Six of the 17 generated categories explained the socio-cultural concepts and phenomena incorporated in Saudi residential design. The various concepts and activities carried out in Saudi houses and how they develop or physically shift in behaviour, or in people's minds, namely their beliefs, and the reasons for these, were demonstrated. The categories also explained how socio-cultural concepts assisted with the formulation and reformulation of the elements of HD.

The components found particularly in Saudi houses and the socio-cultural phenomena associated within them were also described.

Although categories were divided into two themes (namely categories related more to the socio-cultural aspects of residential architecture, and categories related more to the empirical aspect of residential architecture design), all categories complemented each other and were linked through certain relationships as demonstrated in the conceptual model (Figure 5.5). The division was therefore only used for managing the analytic process and for enhancing the demonstration and readability of the findings.

The following section represents the grounded theoretical explanation of the phenomenon '**designing houses in SA and the incorporated socio-cultural concepts and phenomena**'. The theory is an in-depth explanation of the conceptual model developed in Figure 5.5 above. It explains the phenomenon by explaining relationships between its categories, this is the theoretical integration process (Birks and Mills 2011; Glaser and Strauss 2008). Furthermore, in order to formulate the theory, a 'reduction' (Glaser and Strauss 2008: 114) process is performed on the terminology built up during the research process to produce "a smaller set of higher level concepts" (Glaser and Strauss 2008: 110). This is required for the integration process and theoretical formulation.

Residential design varies slightly in SA depending on the different types of buildings and the type of ownership. These are:

1. Developers who design multi-unit projects to sell;
2. Investors who design and build a limited number of projects, often in the form of small-sized apartment buildings, with the main objective of renting them out; occasionally they design and build properties to sell, which may be apartments or individual house units.
3. Finally, but still importantly, private homeowners who become personally involved in the design of their own houses.

The majority of newly built houses in SA are designed and built through private ownership, namely by the people who will live in the house. As they consider their personal and family needs when designing their houses, the socio-cultural manifestation of this is much more apparent. This has been demonstrated throughout the design process and shown in the outcomes to a much greater extent than in other profit-oriented HD approaches. The theoretical account presented next focuses on the phenomenon of houses designed through this type of ownership (private ownership).

5.4.3 The theoretical explanation of designing houses in SA [32]

The phenomenon of designing houses in SA centres around three contexts: 1) the socio-cultural context; 2) architectural practice and its context; and 3) the existing built environment, namely architectural surroundings, particularly residential areas. These three contexts overlap with, intersect and influence each other during a HD project, hence the broken and dotted lines surrounding them in the conceptual model (Figure 5.5), in addition to the relationships indicated by rotation and two-way arrows. The following pages present the theoretical explanation of the investigated phenomenon.

Tradition: a disregarded object, an embedded concept

When carrying out a HD project in SA, the traditional built environment, including the socio-cultural background of homeowners, plays a significant role in shaping choices. These traditions have arisen from two major sources: 1) inherited traditional customs and beliefs ((T1) 6) and 2) Islamic regulations ((T1) 2.1).

Traditional architectural features and motifs are rarely adopted in contemporary Saudi HD; they are defined and thought of as 'old stuff' that is part of history and should be only used for museum purposes. The notion behind this attitude is that tradition is incompatible with modern lifestyles and contemporary commodities ((T1) 6.1). Rapid rises in modern living and a paucity of attempts at reclaiming traditional design using contemporary approaches are two of the major causes of this behaviour (see Chapter 2: Section 3).

This has had an impact on contemporary Saudi HD and its associated socio-cultural phenomena. Nevertheless, Saudi people still have a concept of tradition in a nostalgic and conceptual sense. These concepts did not disconnect from their contemporary style of living, which in some sense explains the conflicts found in attitudes towards tradition, whether as concepts or physical entities (see (T1) 6.1).

[32] The researcher suggests that the reader of this section keeps referring back to the Saudi residential components structures and the conceptual model presented in Figure 5.2, Figure 5.3 and Figure 5.5 for contextual referencing, a detached copy could be more easier to follow.

Transformation of the form of houses, for example from open-courtyard to villa-type houses, alters not only the visual aspects of buildings but also the socio-cultural phenomena and the lifestyles linked to them. However, urban settings are also correspondingly affected.

Traditional architectural features assume three forms in contemporary HD as follows (for examples see (T1) 6.3):

1. Continuity in both the physical form and the conceptual and practical meaning and function;
2. Continuity as a concept, namely socio-cultural aspects and changes in physical form and/or the functioning mechanism;
3. Continuity of the physical form but with a new conceptual meaning and a new function.

Religion, traditional customs and contemporary regulations

The Islamic religion sets rules and guidance for building and some acts within the built context, but does not necessarily demand the application of certain methods or processes. Although this is a holistic viewpoint, it certainly does not suggest that all architectural applications in SA or the socio-cultural practices embedded within them abide by these rules.

Disobeying some Islamic rules in relation to building and contextual behaviour is not always deliberate. Rather, it is an unorganised reaction to rapid developments in architecture and the new building systems that have replaced traditional ones. People have had to adapt to the new physical environment, which in some cases has led them to carry out acts that oppose Islamic guidance. Examples of this are the construction of a building that is higher than the neighbouring one without the owner's permission, which represents a physical violation. A behavioural violation of Islamic guidance is shown in the decline in relationships between neighbours. This has been aggravated by the gridiron neighbourhood layouts introduced in modern settings (Chapter 2: 2. 16), which have also led to an increase in the distance between houses and communal spaces and a consequent decrease in the sense of belonging to a community ((T1) 2.1).

The above argument reflects how the clash between contemporary building regulations and Islamic rules has led to some socio-cultural conflict as well as disputes between individual preferences by people who are willing to adhere to some rules or even some inherited socio-cultural customs but were not able to, due to regulations or contemporary lifestyle requirements.

Socio-cultural phenomena linked to religious concepts

A number of socio-cultural phenomena that have a significant influence on the components and layouts used in Saudi houses are associated with religious concepts. Hospitality, for instance, is appreciated as both an inherited socio-cultural custom and as part of the character of a Muslim. It (hospitality) influences reception spaces in terms of their: 1) form (for example attached/detached and open/segregated); 2) their location in relation to other spaces; 3) position in relation to main elevations/entrances; and 4) size in comparison to the size of other spaces.

Likewise, privacy, conservativeness, segregation, space orientation, and relationships with neighbours are all concepts influenced by Islam and consequently exert an influence on the manifestation of socio-cultural phenomena in the context of houses and their design.

The manifestation of socio-culture in Saudi houses

As well as the traditional and religious influence on the thinking of homeowners, other socio-cultural concepts are apparent in other parts of Saudi houses. An initial manifestation would be demonstrated during the selection of the house's location, for example selecting locations that are closer to relatives or certain social groups. However, the location itself, particularly in urban contexts, only exerts a minor influence on the design process or outcome (see (T1) 5).

Other socio-cultural phenomena manifested in the context of Saudi houses may be divided into the following three areas:

1- Phenomena that arise through general socio-cultural concepts, for example as a result of differences in gender, or phenomena linked with kinship relations, regional background influences or the influence of education and occupation. Conversely, financial status not only influences physical entities but also has an impact on other socio-cultural manifestations such as hospitality and travelling. Continuity and changes in lifestyle elements also create different manifestations of socio-cultural phenomena in Saudi residential contexts (further details are presented in (T1) 2.20).

2- The selection of style and design concepts: whilst style in Saudi houses is an interpretation of taste, concepts are a manifestation of socio-cultural beliefs and understandings. It is easier to alter elements linked to taste than those arising from socio-cultural beliefs as taste is less criticised by social groups. Nevertheless, both factors may be modified and influenced using the right methods and approaches but only to a limited extent at any one time (for details see (T1) 2.3).

3- Socio-cultural phenomena outside the house: this involves manifestations in two locations: the outdoor space surrounding the house but within its boundary walls, and the neighbourhood and street in which the house is located (for details see (T1) 2.4).

Meanings in the Saudi house context

Although the components of Saudi houses are quite similar to other houses around the world, the similarity between some of them does not exceed the shared terminology and the general use concept. The semantics of spaces are better defined through the socio-cultural manifestations in the spaces (details under (T1) 3).

'House' in itself reflects both subjective and objective meanings. The notion of house in the Saudi culture is typically linked with the concept of 'family': it is created for families and explains the family's story.

Saudi houses reflect the Saudi people. Whilst Saudis may differ in the ways in which they represent themselves visually, they maintain their traditional inherited customs and socio-cultural characteristics in their inner minds and behaviour. However, the ways in which these customs evolve or reform changes in response to advances in contemporary living. In this sense, the distribution of zones in house layouts is conceptually divided by homeowners into private (mainly bedrooms) and semi-private zones (for example reception spaces), which adheres to the socio-cultural manifestations in the house.

On the other hand, the term 'comfort' is usually linked with the description of a house. However, the meaning of the word varies between people; some feel comfortable if the space or its components are aesthetically pleasing to them, while others are affected by the cost value. Nonetheless, some people define comfort according to the physical feeling a space or an object in it provides, such as lighting quality, air temperature, and ergonomic furniture design.

Although the outdoor space of a house is favoured by Saudi people, the reasons behind this preference and the employment of the space varies. It may range from aesthetic purposes to more frequent types of use. However, outdoor spaces, particularly open areas, are becoming less frequently used than was the case in traditional settings ((T1) 3.2).

Other components of Saudi houses signify special meanings, for example, in relation to widows and entrances ((T1) 3.4), but more significantly in main reception areas, in which meaning has shifted to more general interpretations following shifts in the socio-cultural manifestations in those spaces ((T1) 3.5).

Some distinctive house components are found in Saudi houses following developments and enhancements in lifestyles, products, technologies and other changing factors. Existing examples are the different types of kitchens, guests hand washing area and annex apartments (see (T1) 3.6 for further details).

Alterations in Saudi houses

Time is the main factor associated with change when it comes to Saudi houses. However, the length of time it takes to perform a change varies depending on homeowners' level of acceptance towards the necessary changes. Nevertheless, these changes take a number of shapes:

1- Changing forms and maintaining concepts: changes are more materialistic than behavioural. For example, most of the alterations in Saudi HD are to physical form and interior decoration, whereas socio-cultural concepts remain similar to an extent (see (T1) 4.1 for examples).

2- Combining spaces/functions: this occurs in response to a number of causes, such as the decrease in house size, the introduction of new layout concepts, and changes in family structures and lifestyles (further details are presented in (T1) 4.2).

3- Post-occupancy alterations: these can be changes in space functions or structural alterations. Whatever their shape, they can be either 1) planned future changes; 2) a response to the developing needs of the occupiers; or 3) for refurbishment/renovation purposes ((T1) 4.3).

The shift in thinking and behavioural change in the context of houses

Changes in house forms have a significant impact on people's thinking and their lifestyles, and vice-versa. HD and the socio-cultural manifestations within them are influenced by people's experiences and changing minds and lifestyles (see (T1) 1).

Changes occur to the way in which people understand and interpret their physical and socio-cultural residential contexts. For example, ideological changes (1) concern the concept of 'a house-for-life', the decision 'to build or to buy a house', and the prioritisation of the family zone/s in the house. However, some ideological changes are difficult to discern, particularly in the early stages, and, if identified, the people concerned may deny them or find it difficult to admit to those changes. Strong and deeply rooted beliefs in socio-cultural concepts are part of the identity and personality of Saudis, who find it hard to accept changes to them. On the contrary, empirical changes are simpler to recognise (for example visual changes involving house forms) and are easier to declare by its people.

Changes in the way in which people think have a number of different causes and affect various socio-cultural phenomena related to HD and its associated processes. Travelling and living abroad, for instance ((T1) 1.2), is both one of the causes and one of the results of ideological change. People started travelling more as a result of changes in their thinking and lifestyles, and the travelling itself helped change the way they think. Comparing HD with other regions ((T1) 1.3) also influences changes in people's way of comprehending their surroundings and their subsequent approaches towards reshaping them.

Moreover, housekeepers ((T1) 1.5) and other types of workers who live in houses create a common phenomenon in the context of Saudi houses. The way in which they live and interact in daily family life has an impact on decisions relating to house layout. This may also influence other related decisions, for instance the size of the house or its rooms or the materials and fixtures used, since these all affect the level of maintenance needed and consequently the level of assistance required.

Female involvement ((T1) 1.4), whether as homeowners or practitioners in the field of residential architecture, is another aspect that demonstrates changes in Saudi socio-cultural perspectives and attitudes towards HD and its associated processes.

A strong influence on Saudi HD is the public perception of the architectural profession, which has undergone a significant shift in recent years ((T1) 1.6). Public understanding of architecture and interior design has shifted from the view that architects are only complementary to the building process to their assuming an increasingly highly regarded status based on their design abilities and important role in creating desired future homes.

Nevertheless, some socio-cultural concepts may be deeply rooted in the beliefs and lifestyle of a group or individual, and attempts to modify them may be perceived as intolerable. A person may also be concerned about what others will say and fear that he or she may be judged or criticised, particularly by relatives. Ideological changes amongst Saudi citizens cannot therefore be taken for granted and it is difficult to make generalisations.

The socio-cultural context of Saudi HD has been implemented in the theory developed in this study. This second intersecting and overlapping section theorises the professional manifestations in the phenomenon.

HD as empirical architectural practice is not exempt from socio-cultural influence. Many elements of the HD process are determined by socio-cultural concepts or influenced by them.

The managing and operating sectors

Whilst a number of sectors are involved in residential architecture, municipalities, the Saudi Council of Engineers (SCE) and architectural offices are more concerned with HD and design processes ((T2) 1).

Municipalities, the primary governmental organising body, maintain the strongest role amongst other related bodies since they are responsible for establishing and monitoring building regulations. Nevertheless, the SCE, Neighbourhood Committees[33] and practising architects influence their activities, particularly in terms of decisions relating to building regulations ((T2) 1.1).

Although municipalities aim to benefit society, they have been criticised for their performance in relation to architectural production and building regulations. The lack of balance between the number of duties they are obliged to carry out (not only related to architecture) and the number of qualified staff they employ is one of the reasons used to justify any low performance from their side. Additionally, the lack of understanding of the role of municipalities has led to the development of further issues and does not help clarify or solve existing matters.

Relationships between the main architectural managing sectors (as described above) influence new developments that aim to enhance practice. The use of electronic building permit systems for which applications are made through architectural offices is an example of a development that has arisen as a result of collaboration between these sectors.

While the SCE does not have direct duties towards homeowners, it does act in their favour by ensuring that all practitioners are qualified and that any member can enquire about the qualifications of any practising engineer or architect through them (see (T2) 1.2 for further information). However, this is rarely the case as most people lack awareness of the facilities available to them and the role of each sector, and consequently lack knowledge of some of their rights as private builders.

Although architectural offices work under the umbrella of municipalities and the SCE, the relationship between them is in practice limited to official tasks such as dealing with building permit enquiries. The isolated working approach in each sector does not assist the development

[33] Neighbourhood committees are arranged and managed by municipalities; members are elected from the same neighbourhood and are expected to represent their area in their municipality branch.

of architectural practice. More regular meetings and detailed discussions between architecture stakeholders would therefore help produce practical and useful recommendations towards enhancing architectural processes and setting better regulations ((T2) 1.3).

Residential projects in architectural practices

In addition to the position of architectural offices as an influential sector of the practice, architectural offices maintain their own working structure (see (T2) 2 for additional details). Privately built houses are the most common projects undertaken by architectural offices. However, development projects, which are rapidly spreading, are favoured by some practitioners as they are less time-consuming and are easier to discuss and reach agreement on design decisions.

The design of houses in SA is not restricted to architects in architectural offices. Some interior design offices, for example, carry out house layout designs, with architectural and structural drawings subcontracted to other architectural offices. Their performance is acknowledged as they offer further considerations of interior details and provide interior design alongside layout design. Nevertheless, many architectural offices have introduced a specialised interior design section within their practices to broaden the services they offer. In other words, approaches to the design of houses have changed and may change further in the future whenever the opportunity occurs. As a result, new practice settings and management guidelines are currently changing.

House design costs/fees

The cost of a HD project varies in the way in which it is estimated. Whilst some companies offer standard estimations, others use different estimating methods such as a percentage of the construction cost. The actual fee differs dramatically between offices; variations are linked to the production capacity of the office combined with the status of the chief architect. In all cases, a down-payment is requested at the start of a project, with the remaining cost either divided along the design stages or obtained near the final stage.

Generally, offices that charge higher fees show a greater understanding of their clients' needs. This is demonstrated by the level of communication with their clients and the time they spend on discussions. Conversely, offices that charge very low fees for residential design projects are strongly criticised by higher-level practitioners and professionals in the field, who maintain that such firms have a negative impact on architectural practice and consequently on the quality of projects and architects' wages. On the other hand, low-fee offices support their position on the

grounds that clients should have options and the freedom to choose in an open market. However, many clients are unaware of the services provided by poor-quality cheap offices and the impact this may have on their projects or future homes.

Who designs the house?

The vast majority of staff working in Saudi architectural offices are not Saudi citizens; some firms are completely run by non-Saudis. Employees are mainly from other Arab countries, for example Egypt and Sudan, a selection based on their ability to communicate with Saudi clients in their native language. Nonetheless, Indians, Filipinos and staff of other nationalities are also employed, mainly as drafters or to manage administrative work.

Non-Saudi architects offer both advantages and disadvantages to the practice (see (T2) 2.2 for extra detail). However, Saudi architects continue to seek to secure better management and improved organisational quality in the relevant sectors in terms of employment options and minimum wage standards.

Criteria of the Saudi house

Saudi houses share some components and criteria with other global residential properties. Nonetheless, as a whole, the socio-cultural manifestations in these spaces and the space relationships in the layout of the house differ from other places to a certain extent (as explained earlier in the theory).

Saudi houses share a number of components and characteristics, which may differ slightly between houses according to their size and the period in which they were designed. The five primary defining features of a Saudi house are (for more extensive details see (T2) 3):

1. The plot: This defines the location, size, orientation and the assigned building regulations of the building zone, particularly in terms of setback requirements and the permitted number of units and floors ((T2) 3.1);
2. Size, forms, types and layouts: The size refers to the actual built area whether in relation to the plot area or as an overall space area that includes all floors and annexes. In contrast, form refers to the house shape. For example, U-shape, irregular, boxy and stepped are forms commonly found in Saudi houses. Moreover, finishing materials (for example stone cladding) and roof forms can also impact the general form of a house (see (T2) 3.2 for a more detailed explanation).

The types of residential buildings range from detached villa-style houses, which are the most common, to apartment units and all other types of accommodation, which are mainly built using concrete. A number of approaches are used to classify the form of the interior layout. Some will be based on focal points, for example a plan with an indoor swimming pool, while others are more conceptual, such as open-plan design ((T2) 3.2).

3. Houses' spatial components :The components of Saudi houses can be grouped into eight general categories: 1) guest reception spaces; 2) family living space; 3) bedrooms; 4) supportive spaces; 5) utility spaces; 6) staircase/s and lift; 7) focal points; 8) additional accommodation. Table 5-1 lists the spaces or components found in each category (Table 4-1 provides a detailed description of each component).

Table 5-1 Primary components of Saudi houses

Category	Space/component	Category	Space/component
Guest reception spaces	Majlis (men/main reception)	Family living space	Ground floor living room
	Women's majlis		First floor living space
	Dining room		Family dining space
	Women's dining room		Entertainment spaces
	Detached reception hall	Supportive spaces	Entrance halls/foyers
Bedrooms	Master bedroom		Roof annex
	Children's bedrooms		Molhaq (external sitting room)
	Parental bedroom/suite		Basement
	Guest bedroom/suite		Home office
Utility spaces	Kitchen/s		Servant room/s
	Hand-washing space		Car garage/ secured parking
	Storage/s	Focal points	Central staircases
	Laundry room		Indoor swimming pool
Staircase/s and lift	Central staircases	Additional accommodation	Annex apartment/duplex
	Service/obscured staircase/s		
	lift		

4. Environmental aspects: little attention is paid to environmental considerations in Saudi HD, mainly due to cost and the additional design effort required. Nevertheless, plot orientation is the most common aspect considered by people, with east-facing plots preferred, despite the higher price they command. In addition, some homeowners and/or architects try to minimise openings towards the west whenever possible, and some homeowners use some type of insulation during construction in addition to other attempts to deal with environmental conditions. There is a lack of awareness by both practitioners and homeowners about the importance and benefits to be gained through environmental considerations during design ((T2) 3.4).

5. Interior design and furnishing: this is commonly carried out by homeowners during or after house construction. Furnishing is sometimes applied in stages when the budget is restricted due to poor cost estimations during construction. Nevertheless, the recruitment of professional interior designers is rapidly increasing. Moreover, the lack of resources to describe the materials and products available and their specifications is an issue faced by Saudi homeowners ((T2) 3.5).

Designing a house: the practical settings

At this stage of the developed theory, all elements surrounding the actual practice of HD are established. The following sections complete the theory by presenting the elements directly linked to the actual HD process.

Communication in a project

The norm in house projects is to have face-to-face discussion at all stages. Methods, tools and the language used are influenced by the architect's level of experience and knowledge, as well as the client's level of understanding of certain design elements and his or her ability to convey the relevant information needed for establishing the criteria relevant to the project ((T2) 5).

Every detail of the occupants' characteristics, lifestyle and social activities can support effective HD. However, this may clash with the conservative nature of Saudi society. Architects may sometimes find themselves in difficult situations if family details are discussed. Some will therefore avoid going through such details and will limit themselves to the basic physical components requested in the house project. Nevertheless, if personal lifestyle details are discussed, they usually take the form of casual conversation, with some practitioners adopting a questionnaire for gathering the necessary data.

Communication: with whom?

As most houses are owned by the husband, he is usually the one to discuss the project with the architect. On occasions where the homeowner is female, she will be the main person involved in discussing the design. The wives of homeowners are becoming more involved in HD in terms of having direct communication with the architect. The architect's gender influences this involvement. A female architect is likely to encourage more participation from the female members of the family, who feel more comfortable speaking with a woman about their needs and daily requirements in their future house ((T2) 4.4).

External parties, such as relatives, friends, or other professionals, such as interior designers, may become involved in house project discussions. However, the inclusion of other members in discussions can lead a project to take longer than average due to a greater number of alterations to the suggested design ((T2) 5.1).

Subjects discussed in a house project

Architects obtain the information needed from their clients through either direct or indirect questions during conversation ((T2) 5.3). The language they use can vary from basic descriptions that aim to be as clear and straightforward as possible to the specialised terminology relied on by some architects. In the latter case, the use of some architectural or design jargon may cause confusion or mislead some clients ((T2) 5.4).

The subjects and variables that may be incorporated into a HD project discussion are divided into the following three groups (for further details see (T2) 5.2):

1. Functions and styles: this may extend beyond the scope of the architectural design into detailed aspects of interior design and furniture, particularly when the discussion includes female clients.

Although architects (who lack an interior design background) will listen to detailed interior design descriptions, they are unlikely to implement them in the architectural design. In any case, on occasions where details related to interior design and decorative elements are added to drawings, they are often altered by the time they are due to be applied in the project or house. Moreover, the addition of details relating to decoration and furniture is mostly done for presentation purposes since their sources and detailed work drawings are not provided in standard architectural sets. The inclusion of an interior design section in the architectural office or the involvement of an interior designer during the design process helps provide more functional house designs.

Style, on the other hand, is either mentioned at the beginning or during the design of the house's elevations. Furthermore, interior and exterior designs are often not closely related in terms of their style.

2. Personal and social details: the ability and willingness to describe personal/family characteristics and general lifestyle varies between both people and architects.
3. Detailed components/elements: this mainly refers to certain complementary details and features such as doors, arches, columns (decorative or structural), window sizes and positions, lighting, staircase shape, air-conditioning methods and the location of electrical sockets.

Architect-client communication tools

Both the architect and the client try to adapt the available media that may assist them in delivering their ideas. Nevertheless, the ability to understand architectural drawings or the perspective of the suggested design components may vary a great deal between clients even when assisted by explanatory tools ((T2) 5.5). The following list summarises the common tools used by architects in SA:

1. 2D and 3D drawings: 3D presentations are a strong selling tool, usually cover the exterior design of the house and often incur additional fee;
2. Images, magazines and catalogues are commonly used by both parties. The Internet is the main source for obtaining images due to the variations offered at no extra cost, in contrast to the high expenses associated with magazines and catalogues;
3. Existing projects: these may include examples of previous projects done by the office, whether through drawings or constructed projects. Clients may also use copies of house plans that they like. Some architects will only use them as a reference to understand the client's preferences and will refuse to replicate them;
4. Questionnaire forms: these are more common than is commonly believed. However, their contents vary and their main objective is to provide official evidence of the requirements agreed upon at the initial stage. Nevertheless, forms do help architects understand clients and their needs; they also help them focus on their requirements from the early stages. Similarly, forms help clients recognise and identify their requirements and consequently make better decisions. Forms also add formality to the process. However, the need to hold verbal discussions in order to link concepts and ideas remains a necessary part of the HD process, not only for the sake of data but also to establish a trustworthy relationship between the client and architect;
5. Notes and sketches: these include drawings of diagrams and basic sketches along with note-taking during discussions. It is a shared phenomenon among architects as it represents part of the typical design process. However, some architects consider them essential and treat them as part of the project's documents by retaining them in the project's file;
6. Emails: these are rarely used, due to the nature of the task, which includes illustrations and requires instant discussion;
7. Telephone: as with emails, telephone calls are used for minor clarifications as well as offering females the opportunity to share their ideas without needing to come to the office;
8. Architect's experience: experience is a crucial criterion in HD. However, the number of years of experience and projects carried out during these years does not necessarily indicate 'good' experience;

9. Negotiation: this is the act of verbally discussing alternative or new ideas and suggesting solutions to a client. This tool is valuable when the architect has the right negotiation skills and talent. Nevertheless, the act of negotiation can involve communication tools other than verbal discussion.

Issues in the communication process

The ability to hold a good discussion using the right tools is a vital component of the design process. However, some issues arise from communication between architects and clients due to poor management of the discussions and their content and failure to realise that this is occurring (see (T2) 5.6 for a detailed list of 18 issues).

Design resources and references

In the absence of periodic updates to design resources, an architect may be restricted to typical design concepts. Although this is evident in many existing house projects, some emerging innovative design concepts and ideas are apparent in the Saudi residential context. Nevertheless, developments in HD and the techniques adopted are not keeping pace with advances in building technologies and product development ((T2) 7).

The design resources adopted within the process of Saudi-designed houses are as follows (see (T2) 7.1 for a more detailed list):

1. The accumulated experience and knowledge obtained through practice of the architect, whether Saudi or non-Saudi;
2. Influences from other places through travelling, living abroad and through the employment of foreign architects;
3. Past projects;
4. Client's personal lifestyle;
5. Other people in contact with the client;
6. Books and specialised magazines;
7. The Internet;
8. Photographs: these were more common before the advent of the Internet, when people used to travel around neighbourhoods and take photos of houses and house components.
9. Retailers' showrooms;
10. International exhibitions;
11. Academic work: for example student projects, dissertations, journal articles, conferences and exhibitions, although these are rarely used as design references.

Resources used for adapting regional designs

There is a lack of adequate examples of regional design and references that can be easily obtained and reviewed by architects. Together with the fact that the majority of architects are foreigners, this contributes to the low levels of production of contemporary regionally inspired designs ((T2) 7.2).

Issues associated with resources for designing houses

Although architects are responsible for obtaining the best design resources available to them in order to remain informed of advances in their field of practice and to adapt the information accumulated into their practice whenever possible, a number of issues associated with design resources in SA still remain.

These issues mainly involve language barriers, accessibility and affordability of resources, and few attempts to gain new knowledge or carry out architectural research when dealing with new projects ((T2) 7.3).

Approaching a new HD project

Several elements are involved when a new HD project is begun. Whilst most of them are quite standard procedures, they are nevertheless critical and have crucial effects on many decisions ((T2) 4).

The first major decision involves is the selection of an architect or architectural office. This is often based on recommendations from close friends or relatives. Another method involves selecting an architect through viewing one of his or her projects or designs, whether this involves construction or drawings. Some offices have begun to develop their own websites, which supports contemporary marketing approaches. Whilst some clients choose their architect based on gender, for example seeking a female architect or designer to ensure a more comfortable environment in which female clients can discuss their requirements without restrictions ((T2) 4.1).

Standard procedures include the provision of certain official documents related to the plot. Some offices make this mandatory before starting a project, whilst others carry out this step at any time during the conceptual design stage, particularly if the plot is in a well-established area and the architect has sufficient knowledge of it and the regulations assigned to it ((T2) 4.2).

The cost of the design is another essential factor at the beginning of any HD process. Architects also wish to know the client's building budget to ensure that their designs are financially

appropriate. However, financial discussions are sometimes a sensitive subject, as Saudis usually do not discuss their financial status in detail with others ((T2) 4.3).

The information exchanged

The first meeting after agreeing to take on the project is usually the longest. It generally explains the layout programme (the type, number and size of spaces), details of the plot and building regulations in that area, the project's budget, the length of each stage in the design process, the expected submission date, preferred forms and styles and information about socio-cultural and personal requirements ((T2) 4.5).

Discussions about socio-cultural details, including personal and lifestyle aspects, often develop gradually as the design progresses and the client and architect become more familiar with one another.

Nevertheless, the amount and type of data discussed in meetings does not necessarily reflect the quality of the design produced. This depends on how the information obtained is used, as architects have different abilities in documenting apparently useful data and then transferring them into drawings or designs.

What makes a good project?

From the architect's perspective, a good project will result if the client puts his or her complete trust in him or her and has a decent amount of freedom with the design in addition to a healthy budget ((T2) 4.6). The architect's design and communication abilities, ultimately supported by up-to-date knowledge, have a major role in defining the quality level of a HD project.

The conceptual design

The outcome of the initial discussions between the architect and the client produces a basic layout proposal, which demonstrates space components and relations on the ground and first floor levels. This signifies what is known as the conceptual design. The primary part of the first stage of a HD project is termed the conceptual design stage and lasts around two weeks ((T2) 6).

The conceptual design is developed based on either 1) the architect's input with minimal input from the client; or 2) a balanced share of inputs between the client and the architect; or 3) a forceful demand of certain aspects by the client with unaccepted or minor input from the architect, in which case he or she acts more as a drafter than designer (an extended explanation is given in (T2) 6.1).

The majority of architectural offices will ultimately adhere to clients' demands on the grounds that they are running a business and need to maintain reasonable income.

Additional considerations when designing a house

In addition to the standard programme, other features considered by some architects while designing a house project are as follows ((T2) 6.2):

1. Prioritisation of requirements: this may be influenced by physical attributes such as space allowance and budget, or by personal and social preferences;
2. The extent of flexibility in the arrangement of spaces and the provision of alternative solutions;
3. The requirements of particular family members;
4. Interior design requirements;
5. The locations and forms of windows;
6. Exterior design preferences;
7. Expected future alterations;
8. Expected allowance for amendments to the conceptual design, namely how many changes the client is allowed to make to the proposed design during the conceptual design stage.

Replicating other designs

One form of HD production involves replicating existing designs; this is commonly known as a 'copy-and-paste' design. Highly regarded architectural offices will often refuse to carry out a project by copying another one, whether from their own designs or from others. Some admit to copying, for example, small to medium-sized apartment buildings on the grounds that these buildings are not meant for private or personal use but rather have been constructed to meet investment objectives.

Nonetheless, some architects will argue that repeating a HD does not necessarily end up with a replicated copy, since altering some components or space dimensions to fit the dimensions of the new plot will produce a new design that differs from the original ((T2) 6.3).

Issues associated with the conceptual design stage

During the conceptual design stage, some issues occur, which may involve the following circumstances ((T2) 6.4):

1. An unnecessarily long time to finalise;
2. Irrational design requests;

3. Understanding the client's needs after developing the conceptual design;
4. Client's inability to read plans and/or understand space parameters and allowance;
5. Unrealistic expectations on the part of the client in terms of design components and size;
6. Unwillingness or inability to incorporate interior design requests with architectural layouts;
7. Inadequate space allowance designs, for example the driver's rooms being too small.
8. Conceptual designs that do not show the design of elevation or windows.

The application of design concepts and styles

Design concepts and styles are considered during and after the conceptual design process and during the design of elevations. However, the level and quality of consideration and application varies (see (T2) 8 for a detailed explanation).

The most common terms used when describing a house's style are 'classic' and 'modern'. A contradiction between Saudi house concepts and styles and between exterior and interior designs is evident ((T2) 8.1). These contradictions reflect a notion that people are torn between new and contemporary designs and the ideas formed in their minds from the past.

House plans and exterior designs are frequently dealt with or designed at separate stages during the design process, which contributes to the contradictions that have been observed. Furthermore, the exterior design may be altered from the architectural drawings during construction without the need to seek permission from the designer or the municipality. Owners often make such decisions for many reasons. For example, financial constrains may lead them to cancel or scale back parts of the elevation design details to reduce costs. Contractors' interference is another cause of the alterations made to HD during construction.

In general, in an average HD project most architects will rarely make an effort to relate the design of the interior with its exterior especially in terms of style. Whilst this does not remain an issue, poor HD does. On the contrary, for business considerations, architects will adhere to clients' demands even if this leads to the production of disproportionate and distorted design outcomes. Nevertheless, some attempts do demonstrate efforts to produce coherent designs in terms of style.

Identified styles in Saudi houses

The subject of style in Saudi architecture (excluding interior furnishing) usually refers to the shape of the exterior form and the details on the elevations. Identified styles vary in type; however, houses with one definite clear style are limited as most houses incorporate elements from different styles, such as in an eclectic style.

Saudi houses used design elements from Islamic, regional, classic, Moroccan, Spanish or Mediterranean, and modern styles (see (T2) 8.2 for more details and Table 4-2 for examples).

In describing a style, the term ‘modern’ is often used as an indication of ‘contemporary’ or new design rather than the Modern school of design. In addition, the term ‘classic’ is also used to indicate highly detailed and luxury design.

Style selection

Whilst style is often a reflection of personal taste in Saudi HD, the following factors also influence the style selected ((T2) 8.4):

1. Recentness of a style, namely style trends;
2. Familiarity with a style, namely using styles that are relatively common;
3. The influence of grand houses;
4. The cost of creating the style;
5. The influence of architects’ or designers’ recommendations;
6. Social influence;
7. Educational background;
8. Living abroad and experiencing other style contexts and ideologies;
9. Travelling and exploring foreign styles;
10. Poor knowledge of the varieties in style;
11. Weak ability to adapt to different styles in a desired way;
12. Not having to link house exteriors with socio-cultural requirements, which offers more freedom of choice.
13. Architects and developers will select styles that are easier to market and offer higher profit margins;
14. Influence of the media, namely television, the Internet and magazines and books;
15. Older children will have an influence on the selection of house style/s;
16. Experience from previous places of residence; a person is likely to avoid concepts or styles that caused him or her some kind of discomfort in the past, whilst remaining attached to styles they enjoyed.

The adaption of Saudi regional design

Few people choose elements from regional design for their new houses. For those who do, the architect will copy and paste selected design features from their preferred region to the design of the house elevations with little creativity and hardly any functionality. Although such designs

will have some significance for their owners, the meanings and function of those features developed in traditional settings and do not extend to contemporary replications. Nevertheless, architects will not suggest or offer to use regional features during the design process.

The introduction of advanced and practical architectural systems, new architectural materials and new technologies has provided simpler and cheaper alternatives to the high-maintenance and relatively design-restrictive traditional systems. On the other hand, changes to motifs, such as in the elevation of houses, has not encountered a shift in socio-cultural beliefs or criticism from social groups as could occur as a result of conceptual changes in layout designs ((T2) 8.3).

Other reasons preventing people from selecting regional design could include:

1. The search for luxury, which is lacking in available regional design;
2. Wanting to make a contemporary impression, which cannot be delivered using traditional elements (according to their beliefs);
3. Feeling bored with the repetitive conventional approaches used to replicate or reproduce old regional design;
4. The lack of innovative examples in present projects using traditional design;
5. The relatively high cost associated with a good-standard regional design;
6. The high maintenance associated with regional design.

Issues in the practice of designing houses

The issues that occur in designing Saudi houses are grouped into three categories:

1. Issues related to organising bodies (see (T2) 9.1 for details);
2. Issues related to the practising sector (see (T2) 9.2 for details);
3. Miscellaneous issues from various sources, for example those related to clients or the media (see (T2) 9.3 (T2) 9.2 for details).

Future improvements and suggested solutions

Stakeholder input suggests that attempts to improve the practice of Saudi HD should occur by solving the issues they have identified. Nevertheless, most recommendations involve the input of an organising body, since they have the highest level of control of the system and can have a further holistic impact on the field ((T2) 10).

The future of HD in SA

A number of predictions have been made concerning the practice of HD in SA. While some suggest that everything will remain the same, other observers, along with prevailing conditions, suggest a different scenario, particularly in terms of house forms.

The strongest opinions anticipate that financial and economic conditions will continue to have an impact on private houses in terms of their design and form, for example, a reduction in size and less complex layout design. Furthermore, the approach to self-build a house will be widely substituted by development projects ((T2) 11).

Secondary factors influencing house designs in SA

Many other factors have some influence or impact on the phenomenon of HD in SA and its outcomes, for example:

1. Interior design and furnishing (see 4.3.1);
2. Construction and related aspects, for example hiring a contractor and supplying building materials (see 4.3.2);
3. House-development projects (see 4.3.3);
4. Buying a house (rather than having one privately built) (see 4.3.4);
5. Housing projects (compounds) (see 4.3.5);
6. Architectural studies and education (see 4.3.6).

5. 5 Chapter summary

This chapter developed the research findings through generating three forms of outcomes, in which they aim to explain the phenomenon of '*designing privately built houses in SA and the incorporated socio-cultural phenomena and concepts*'. The methods used to develop these outcomes were explained at the beginning of the chapter, along with the possible benefits that may be acquired through employing them in research and practice.

The following chapter discusses these outcomes and validates them. Nevertheless, a practical application demonstrating their usability and usefulness is also presented and explained through the development of the Saudi house design model (SHDM).

Chapter 6
Discussion and Development:
A Working Model towards Understanding and Improving House Design in SA

6. 1 Introduction

As a result of the researcher's investigation and the findings from the data analysis, three forms of outcomes representing the context of house designing in Saudi Arabia have been developed, as presented in the previous chapter. These are:

1. The categories constituting the phenomenon of Saudi residential design (section 5. 2);
2. The conceptual model of demonstrating the phenomenon of designing privately built houses in SA (section 5. 3); and
3. The substantive theoretical explanation of the phenomenon (sections 5. 4 and 5.4.3).

In this chapter, the researcher discusses and validates these outcomes, through outlining the relativity between them alongside the concepts of 'sets', 'patterns' and 'pattern languages'. These concepts have been widely discussed and employed in architectural studies and practices, predominantly through the system developed by Christopher Alexander and his colleagues, as presented in the bestselling architectural book (Erickson 2000: 360) *A Pattern Language* (Alexander et al. 1977) (see section 2. 8). Through the discussion, the researcher argues that HD in SA has a profound set of episodes that form a reoccurring pattern language, and that the outcomes of this research constitute *the pattern language of Saudi house designs*.

On the other hand, Birks and Mills (2011:150) state that "the practical applicability of grounded theory research is the ultimate measure of its value". Hence, alongside validating the outcomes, the discussion aims to suggest a practical model for designing Saudi houses: namely, the *Saudi House Design Model* (SHDM), Figure 6.1 offers a brief demonstration of the model's constituents, whereas, an extended and detailed structure of the proposed working model is explained later on in the chapter (sections 6. 5 and 6. 6) and demonstrated in Figure 6.4. Although this model primarily focuses on privately built houses, the concept of the model (with minor adjustments, as discussed below) can be applied to any type of residential building, and also to similar contexts.

Firstly, there is presentation of the contextual meaning of the concepts discussed (i.e. the concepts of 'sets', 'patterns' and 'pattern languages') (section 6. 2). Secondly, there is a demonstration of Alexander's[34] pattern language, along with a discussion of its concept and

[34] For ease of exposition, the expression 'Alexander's pattern language' is used instead of 'Alexander and his colleagues' pattern language' or 'Alexander et al.'.

method of adaptation (section 6. 3). Thirdly, the researcher adapts and develops the research outcomes using different design approaches to form the suggested SHDM (sections 6. 4, 6. 5, and 6. 6). What is presented here should be perceived as the *foundation* towards the development of the SHDM that will require further evaluation and modifications, preferably by a group of developers from the various stakeholders involved in residential architecture design, including homeowners as explained later on in this chapter.

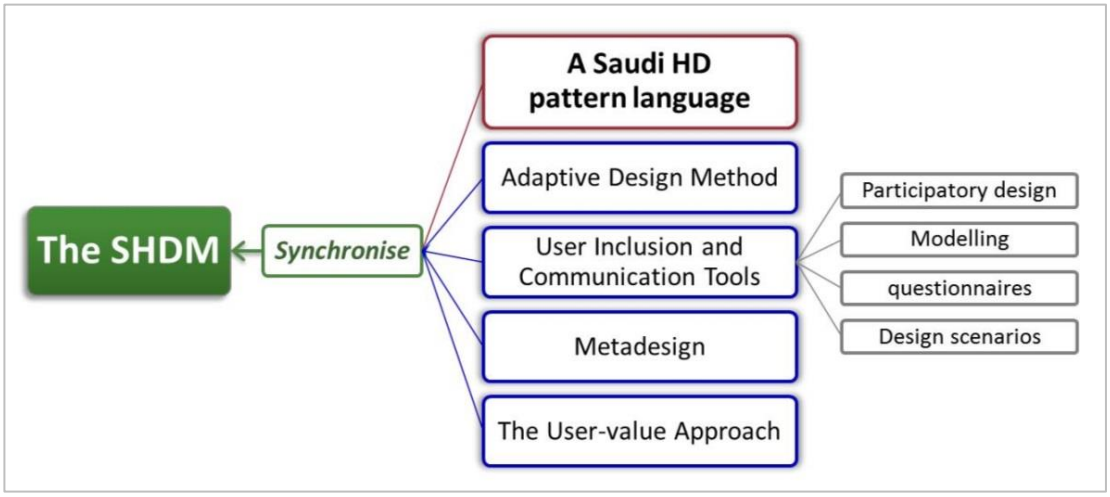


Figure 6.1 The constituents of the SHDM

6. 2 The constitution of a pattern language

6.2.1 Sets

The outcome directly generated through the research process (i.e. the structure of categories found in Saudi HDs (section 5. 2)) represents what Hall (1990) referred to as a 'Pervasive Set'. In *The Silent Language*[35], Hall defines a 'set' as:

> "A group of two or more constituent components that is perceived as being set apart from other things." (Hall 1990: 102)

Hall then provides an elaborative explanation of the concept and its uses. He affirms that formal sets (e.g. words, buildings, families, months, etc.) are easier to recognise than informal and technical sets. However, once formal sets are observed in technical terms (e.g. words as part of languages, or buildings as part of civilisations), they become more difficult to recognise.

[35] *The Silent Language* by Edwards Hall was originally published in 1959.

Nevertheless, "sets are seldom perceived in isolation. Normally they appear in contexts and as one of similar or related events" (Hall 1990: 102).

Within the holistic set of categories and concepts that comprise the phenomenon of Saudi HD, a range of smaller sets constitutes a larger (holistic) set. A number of sets within the holistic set are easier to perceive than others. Moreover, the interpretation of sets depends on the understanding of the patterns in which they are used. Hence, a certain set of episodes may be recognisable, but this does not necessarily mean that an individual understands the language they create, or which created them.

Sets may be *classified*, *categorised* and *ranked* within their categories, which in turn reflect their cultural significance[36]. Nevertheless, the only meaning *sets as sets* offer are that which Hall refers to as 'demonstrational' meaning. This is the direct description of a set, e.g. –this is a 'house', –that is a 'bird'.

> "By themselves, sets are neutral. In patterns, on the other hand, sets take on all sorts of more complex types of meaning." (Hall 1990: 109)

In SA, a privately built house is, as a unit, an easily noticed and perceived set (–that is a 'Saudi house'). However, perceiving the patterns within a house set (i.e. the relationship between the fence-wall, gates, widows, roof, etc.) forms a further complex meaning. Similar to this example is the perception of a set of privately built houses (i.e. a group of houses), as a composition, they constitute patterns that are more complex to explain/understand than an individual house. These patterns are easier to understand by someone who understands Saudi culture, and, as noted by Hall, can be misinterpreted by a foreigner:

> "To master a foreign culture it is necessary to master its patterns and isolates as well as its sets." (Hall 1990:103)

The set comprising a Saudi house (or a set of houses) may be *classified* in terms of type, form, period, finishing material, etc. Whereas the *categorisation* within a classified set of Saudi houses may refer to the type of builder, (e.g. private or commercial developers), or it may refer to the type of stone used in the cladding of the house. As mentioned above, these categorisations often are *ranked*, with their ranking also reflecting a form of value. For instance, houses built by

[36] For examples see Hall (1990: 103–7).

private owners[37] (see types of residential ownerships p. 266) are generally preferred by house buyers (i.e. higher valued) as they are believed to be of better quality (see section 4.3.4). Yet houses designed for development projects are ranked higher by architects in terms of design process preferences (see section (T2) 2.1). Likewise, the classic style (in oppose to modern styles) are ranked higher by Saudi homeowners, whereas many architects find modern houses more exciting to design (see section (T2) 8.2).

Consequently, the set of concepts/entities generated by this research constitutes patterns that vary in their complexity. Although many of the patterns (whether in physical forms or patterns of behaviour) may be easily perceived by local and foreign architects, the true interpretation of their meanings cannot always be determined by simply noting their existence. It requires a deeper understanding of the socio-culture that produced these patterns and which they represent. Nevertheless, the structures presented in section 5. 2 offer a holistic reference to the majority of entities within the set of Saudi residential architecture. The patterns that connect these sets are discussed in the following section.

6.2.2 The organising pattern

If the set is that existing aspect directly perceived by human beings, a pattern is the implicit cultural organisational plan that gives meaning to the sets (Hall 1990: 110, 116). Patterns are perceived differently by different people, whereas groups can be identified in relation to their shared relationship to a pattern. Hall states that the definition of a pattern should expand to be:

> "A meaningful arrangement of sets shared by a group." (Hall 1973: 125)

Alexander (1979) confirms this perspective in his statement that patterns, their orders and the repetition of patterns "come simply from the fact that all the people have a common language, and that each one of them uses this common language when he makes a thing" (1979: 209).

Patterns can be formal, informal and technical. Hall (1973) states that they are governed by three laws:

[37] This is an individual who builds a house for himself, but at some stage decides to sell it.

1. Order

When the order of a pattern is altered, meanings change correspondingly. In the case of this research, order is established between all sets comprising the HD phenomenon in SA. An example of changes in order, and its impact on meaning, can be noted in the order of the housing design system, i.e. between the traditional system (see section 2. 15) and the contemporary system (see sections 2. 16 and (T2) 1). The impacts of these changes on meanings, nonetheless, the product are unmistakeable (as outlined in section 2. 17).

2. Selection

This defines the group of sets that are used together. "There is no inherit logic to selection… the selection patterns change with time" (Hall 1973: 134). For instance, the combination between (the set of) Islamic rules and (the set of) building regulations. The selection of different sets of design resources is a further example of this law's impact in shaping HD patterns. The simplest way to identify when a selection is being implemented is when two or more sets are bound to each other by customs, in a case when any other alternative set could 'logically' serve a similar purpose (Hall 1973: 135).

3. Congruence (or style in the broadest sense)

While order and selection are linked with the patterning of sets, "congruence can be expressed as a pattern of patterns" (Hall 1973: 135). This determines what can, and cannot, be applied within the boundaries of patterns. Hall (1973: 136) argues that a complete congruence is not possible, and a complete lack of congruence occurs when everything is out of order. He then provides an example demonstrating a lack of congruence:

> "In architecture when Culture A borrows architecture from Culture B, Culture A takes the sets but not the pattern… attempts are made to achieve congruence on one level without regard to distortions introduced on another." (Hall 1973: 136)

This example applies to house designs found in SA today (see (T2) 8). However, the recurrence of this incongruity on a wider scale develops a congruence pattern, which has become culturally acceptable. Therefore, the law of congruence may also change through time.

6.2.3 The pattern language

Alexander (1979: 183) states that the system of patterns create a language. According to Merriam-Webster' dictionary a *language* is defined as:

> "The system of words or signs that people use to express thoughts and feelings to each other. [or] Any one of the systems of human language that are used and understood by a particular group of people." (Merriam-Webster n.d.)

Thus, in house designs, a pattern language can be defined as:

> The system of patterns used and understood by a particular group of people to express their thoughts and feelings to each other.

The conceptual model that is developed in this research (section 5. 3), together with the theoretical explanation of the model (i.e. the explanation of privately designed houses in SA) (sections 5.4.3), demonstrates the language of patterns found in HD in SA.

6.2.4 The Saudi HD pattern language

In light of the above discussion, a pattern language can be seen as an evolving set of concepts that form and change over time (Figure 6.2). The Saudi pattern language in the design of houses identified through this research reflects the three basic elements of a pattern language: 1) a set of episodes, or concepts; 2) patterns that arrange these sets; and 3) a Saudi system that organises the relationships between the patterns in a meaningful way.

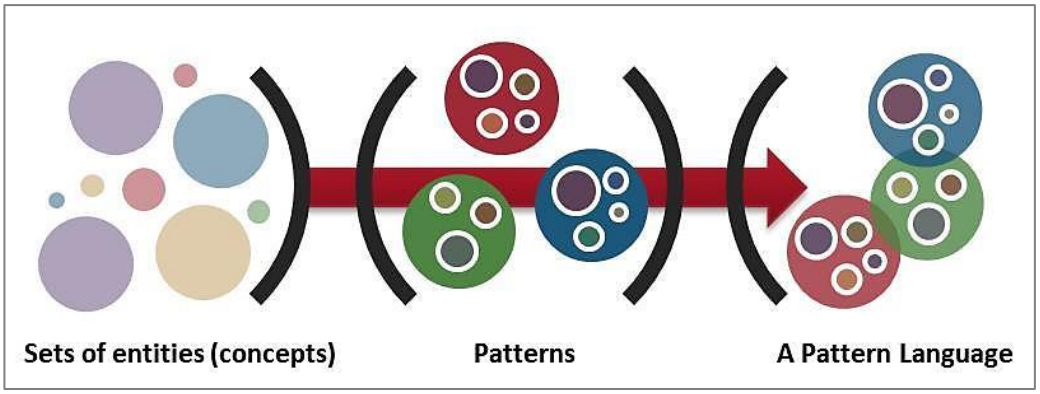


Figure 6.2 The constitution of a pattern language

In both its illustrated and written formats, Saudi HD pattern language offers a clear reference to house designing in SA, along with the incorporated socio-cultural meanings and manifestations. This reference will assist individuals (whether professionals or layman) in understanding and/or verifying current conditions in residential design as they become more conscious of their pattern languages. Moreover, many issues involved in the design of houses (whether identified through this research or other developing issues) can be argued and resolved faster as a result of the contextual and holistic explanation of the patterns presented by this study.

At this stage, the research outcomes have been validated in terms of their forms and structure. However, their practical employment has not yet been discussed. The following sections will undertake this examination. However, a brief explanation of Alexander's pattern language system needs to be explored prior to its adaption for the development of the HD model.

6. 3 Alexander's pattern language

A pattern language is an architectural and urban design system based on 253 universal claimed patterns. Each pattern defines an entity representing a rule explaining which steps need to be taken in order to create that entity (Alexander 1979: 182). The method aims to design environments that have what Alexander calls "the quality without a name" (1979). He states that:

> "Every place is given its character by certain patterns of events that keep on happening there. The patterns of events are always interlocked with certain geometric patterns in the space." (Alexander 1979: x)

Erickson (2000) discusses the use of *A Pattern Language*, stating that in architecture:

> "A practicing architect who sometimes uses patterns tells me that Alexander's approach has a relatively small following within the architecture profession; however, 'patterns architects' do get a steady stream of clients who have sought them because they wish to use Alexandrian patterns." (Erickson 2000: 360)

Conceptually, *A Pattern Language* is a relatively simple system for designing architectural projects. Once the individual using the language understands its concept and process, the application can then be quite straightforward. The following sections offer a brief description of the patterns' format and ways to use the language.

6.3.1 The patterns' form

The Alexandrian patterns range in scale from patterns for arranging cities, to those concerning the placement of shelves. For clarity, each pattern is presented in a similar format, with an average of four pages per pattern. Figure 6.3 illustrates an example of a pattern (184 COOKING LAYOUT); it starts with an archetypal image of the pattern, then a statement describing the pattern's context and relation to larger patterns. This is followed by an explanation of the problem. The problem describes the practical aspects in the pattern, including its validity, and the ways of applying the pattern in a building, etc. After this description (which is the longest part in the pattern) the solution is presented, accompanied by an explanatory diagram. Each

solution gives the required field for manifesting the physical and social relationships in the pattern. The solutions are concrete, but in a general and abstract way, so it can be adopted to individual preferences, and in a way that fits the conditions and the place to which it is applied. Nevertheless, the presented solutions vary in terms of their significance, as some are more profound and certain than others: this was clearly identified in the presentation of each solution (see Alexander et al. (1977: xiv–xv)). At the end of a pattern, a paragraph linking the pattern to each of the smaller related patterns in the language is stated. Consequently, each pattern is linked to all other directly related patterns, both above and below, so that "no pattern is an isolated entity" (Alexander et al. 1977: xiii).

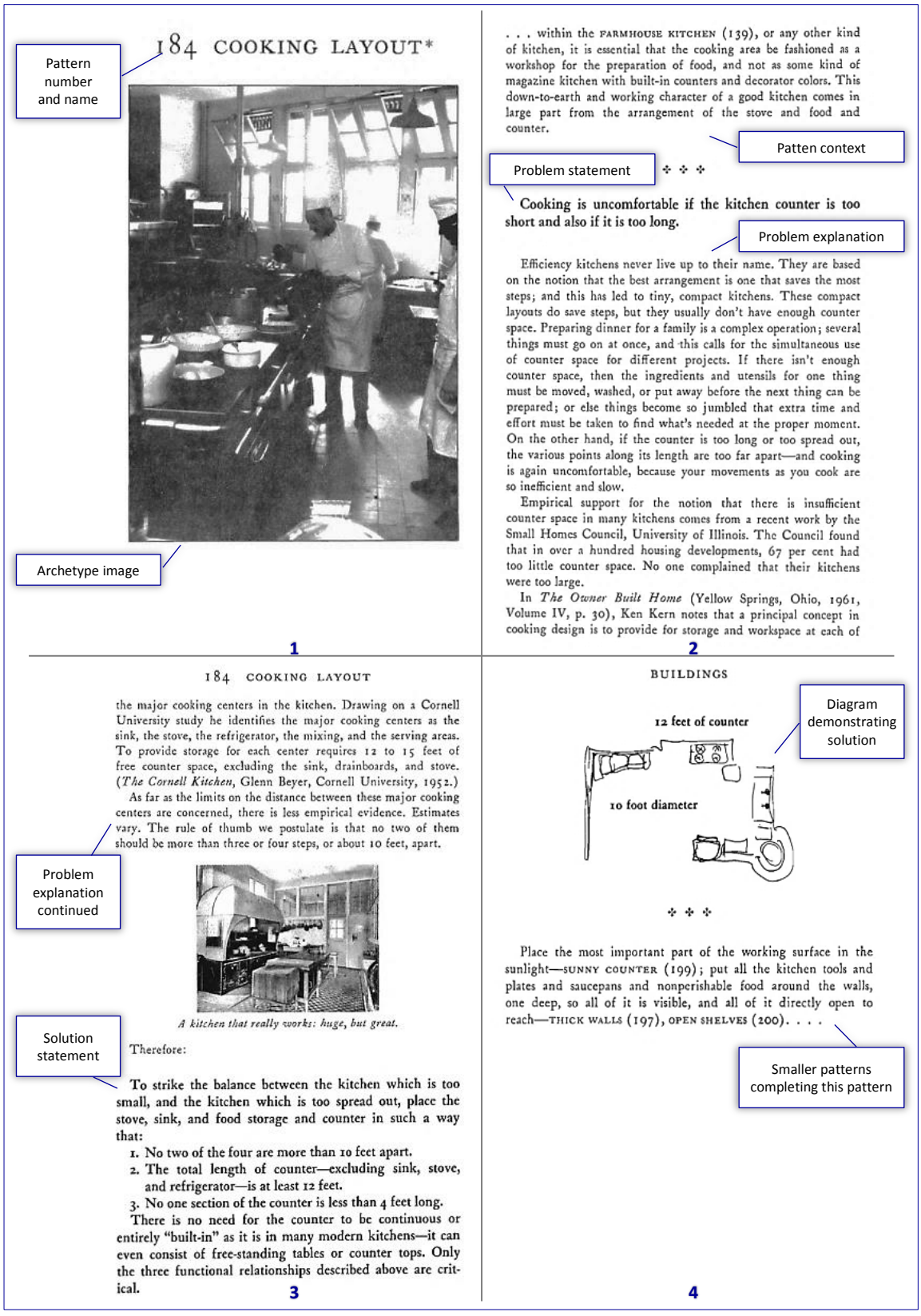


Figure 6.3 An example of an Alexandrian pattern
Source: Alexander et al. (1977: 853–856)

6.3.2 The application method

The format of patterns is important in applying the system. The following points present a summary of Alexander's explanation on how to use the language (Alexander et al. 1977: xxxxiii–xl):

1. Select the patterns that will form the language for your project.
2. Identify the pattern that describes your project in depth: this is the starting pattern.
3. Read through the starting pattern, taking note of the larger patterns. Do not include them unless you have the capacity to create them. The smaller patterns at the end are important; select them, unless you have a reason not to.
4. Move to the next higher pattern and repeat the same process.
5. If you are not sure about a pattern, do not include it: a long list will be confusing.
6. Continue the process until you have all the patterns for your project.
7. Now adjust the list by adding the elements you need in your project, but for which you have not found a suitable pattern, i.e. if you want to include a sauna then add the closest related pattern (e.g. bathing room (144)).
8. If required, change a pattern so that it is more relevant for you. This will make the language your own.

By this stage, a language is created. Instructions on how to use languages are explained separately under the different sections of *A Pattern Language* (i.e. towns, building, and construction). The main focus of this research is on the 'building' section, since it is more related to the design process. Alexander considers designing with patterns an unfolding process, rather than a leaner one (Alexander 1979: Chapter 19). The following points summarise the way to use the language for designing a project (Alexander et al. 1977: 463–466)[38]:

1. Take the patterns one by one; let the form develop through the patterns, the site and your instincts.
2. Work on the site and with those who will use the place.
3. The form will grow gradually into a refined and finished project.
4. Read the patterns, one at a time, review their relationship with other patterns and envision their contextual settings.

[38] For detailed description of the design process, see Chapters 20, 21 and 22 in Alexander (1979).

5. Imagine how you can establish this pattern on the site, then mark the walls and corners.
6. Complete the pattern by perceiving it as an entity before moving to the next pattern.
7. Following the sequence of the language means that large changes will not be needed. On the contrary, changes will get less and less as you advance.
8. Keep your design fixable. The design can change as long as the relationships and characteristics of the earliest patterns are maintained.
9. While working on a pattern, consider the other patterns (larger and smaller) to which it is linked.
10. When designing a larger pattern, ensure there is a capacity for the smaller ones associated with it.
11. Track the design so you are always certain it is within budget. Estimate the square area that you can afford.
12. However you elaborate a pattern in the design, make certain you maintain the square area within your estimated budget.
13. Modify any essential points in the marks used earlier on the site. Try to avoid designing on paper: find a way to mark your points on the site.

After this process is completed, patterns for construction should be followed. However, construction methods are not the main area of interest in this thesis. Following this outline of Alexander's pattern language form and process, the next section will discuss its adaption for developing the SHDM.

6. 4 Adapting the pattern language system for the SHDM

As an architectural design process, *A Pattern Language* is the most practical and extensive method developed to date. Many of its advantages can be realised relative to its concept and process. Nevertheless, Erickson (2000) mentions some of the roles and usefulness informing use of the system. He states that pattern languages support the creation of quality systems; that is systems that truly 'work' for people. Another useful feature when using pattern languages is the ability to re-use solutions for commonly encountered problems. Additionally, patterns offer concrete prototypes, are grounded in the social, express values and support piecemeal use (see Erickson 2000: 361–363).

Although the majority of Alexander's patterns are universal, there remain an infinite number of patterns that can be added to the language (Salingaros 2006: 220).

> "Every society that is alive and whole, will have its own unique and distinct pattern language; and further." (Alexander et al. 1977: xvi)

Thus, patterns should reflect specific customs and behaviours, and fit the contextual settings they are designed for, particularly the environmental, cultural and traditional settings that need to be examined by architects/designers when using a pattern language system (Salingaros 2006: 220).

In view of the argument stated above, and in light of the earlier discussions in this chapter, which demonstrated the presence of a Saudi pattern language in HD; the researcher concludes that HD in SA requires a refined and elaborate demonstration and explanation of its own distinct pattern language. Only by clearly identifying these patterns and the languages that bind them, will HD in SA achieve what Salingaros (2006) describes as an 'adaptive design'[39] (see section 2. 8: Adaptive Design Method).

The production of a Saudi architectural pattern language will assist in enhancing architectural processes, not only in practice, but also in educational settings in Saudi universities (if adopted as part of the curriculum) (Salingaros 2006: 220), where it could form the basis of the initial training Saudi architects receive. However, in this research the main interest is particularly focused on designing houses. Therefore, the emphasis will be on developing a foundation and a working model to produce a pattern language for designing houses in SA, namely, the SHDM.

Alexander's patterns will be adapted as the conceptual structure for the SHDM. Nonetheless, although Alexander's patterns have a claim to universality, when comparing them with the findings and outcomes of this investigation, very few are found to correspond to the Saudi HD context. That is to say, some patterns will need to be removed, and others will need modification to reflect the Saudi physical and social context; more crucially, additional patterns need to be designed. However, prior to going further and explaining the requirements and shaping of the SHDM, some useful architectural and design methods (explained earlier in Chapter 2: Section 2) will be discussed in terms of the benefit they add to the proposed model. Integrating different concepts from different models (as required by the design model objectives) helps avoid a lack of synchronisation across the phases of the design process, as was

[39] An adaptive design method combines a pattern language and a form language; it produces "structures and environments that are adapted both to physical human use, as well as to human sensibilities" (Salingaros 2006: 222).

highlighted by Steele (2000: 76) as a common feature of the design process (discussed in Section 2. 7). This integration will support the objectives of the SHDM (see section 1. 2), and fill in some of the gaps that may occur when adapting Alexander's pattern language system.

6. 5 Design methods integrated in the SHDM design

6.5.1 The Adaptive Design Method

First, the *Adaptive Design Method* presented by Salingaros (2006), which combines the two languages: 1) a pattern language; and 2) a form language (see section 2. 8 for explanation), will be used to complement the proposed HD model by contributing to the design of the physical form of the house. This will be achieved by integrating the concept of form languages with the suggested pattern language.

Salingaros (2006), offers an extensive explanation of how form language is created, applied, replicated, and how it can be *adaptive* to human needs through the passage of years, or *non-adaptive*. He argues, for instance, about the use of primitive forms in contemporary architecture, and declares that each traditional form language is distinct yet complex. Erasing a form language is equivalent to erasing its culture, which is similar to what he would describe if the literature of the culture was erased (2006: 230). However, replicating a primitive form visually without the language, i.e. as a style, leads to a repetition of forms that lack the complicity and connectivity with a pattern language or the ability to define a true language. The outcomes from such an approach will not satisfy human needs, and this ineffective use of form languages, according to Salingaros' argument, produces non-adaptive designs, which is evident in the case of SA house designs. Therefore, it is essential to consider form languages when shaping and applying the proposed SHDM.

6.5.2 User inclusion and communication tools

In this section, the withdrawal and integration of some design approaches and tools is suggested. These approaches are chosen based on their complementary features, as these would be expected to enhance the design of the proposed HD model.

Participatory design (section 2. 8), is represented by the inclusion of users in the process (section 2. 10), i.e. the proposed users of the house being designed. This notion should be adhered to while designing all types of residential building (unless there are strong reasons preventing this). Users should be involved as part of the design team, and participate in

discussions and the formation of the conceptual design and the associated form/s. They are not only involved to specify a physical space requirement data (i.e. the design programme).

In the proposed SHDM, since nearly all the houses are designed by an architect/designer (i.e. not homeowners), this would mean that users participate with the architect/designer in selecting a list of patterns and modifying the necessary elements to fit their personal physical and socio-cultural needs. They should also participate in the remaining process, which involves the generation of a layout design. The constructive involvement of users in the design of their houses would fill in the gap identified by the early research review; it was found that the majority of practices and architectural design studies exclude the valuable role of users in most applications (see section 2. 10).

The use of different communication and design *tools*, other than 2D drawings, will significantly help in the shared design generating process, e.g. by using building blocks/cubes, cuts of cardboard/soft-wood to create a basic model, using space marks on site (as explained in Alexander's pattern language application process, section 6.3.2), and 3D design software, through using basic forms that laypeople can understand and manage. Adoption of such tools is part of constructive communication (section 2. 10).

Nonetheless, the employment of *questionnaires* (section 2. 9) in the preparatory phase of a project help to establish the architect-homeowner relationship and a plan for the homeowner in terms of what the design process will involve and how will it progress.

On the other hand, using *design scenarios* (sections 2.12.2 and 2.12.3) during the different phases of the design process can be done to record the stages, the selections made, the developments that occur, and the elements to be avoided in the design/process, etc. This will help in maintaining a coherent process and protect information from being lost as the design progresses. This also helps with preventing issues that can arise due to changes in members being involved in the design/project. Design scenarios are also helpful tools for connecting patterns; this is precisely achieved by using them to record the patterns' language.

6.5.3 The Metadesign approach

Metadesign (see section 2.12.5) shares some objectives with the participatory design approach. However, in participatory design the focus is mainly on requirements being raised at design time, while little emphasis and few mechanisms are offered to support the design of environments as living entities that evolve over time. Metadesign, therefore, is promoted as an open-design approach, that allows users to modify designs at use time. This "intentionally shifts

some control from designers to users, enabling users to create and contribute their own visions and objectives" (Giaccardi and Fischer 2008: 21).

Integrating the metadesign approach into the SHDM will primarily support the objective of flexibility that is required in the design of houses (see section 2. 9). This can be implemented through, for example, leaving some design elements to later stages. Literature and findings from this investigation have already demonstrated that homeowners carry out diverse alterations to the design of their houses during construction, and after living in the house for a while. Therefore, organising this practice will make it more practical and clearer. For instance, the location and opening direction of a door into a room can be decided upon during construction and after the structural frame is constructed so that the homeowner can envision spatial relations more clearly. Similarly, window positions and sizes, and secondary partitioning walls (such as walls dividing the sleeping area from the dressing room) can all be intentionally left to the homeowner to decide on during the construction stage. This clear approach openly and practically allows homeowners to take decisions based on their actual needs and preferences; the decisions may seem relatively minor, but they will make a considerable difference in their day-to-day living experience in the house.

Studying the position of columns and other loadbearing structures is another approach to pursue in relation to the metadesign approach. This will insure environments that permit future changes, as the location of such important components can have a huge effect on the building's flexibility to permit future changes.

6.5.4 The user-value based approach

The *User-value based* approach (section 2.12.4) is based on four primary categories of user value: 1) utility; 2) social significance; 3) emotional value; and 4) spiritual values. The inclusion of this approach is conceptual. This is to say that the approach can be adapted to organise the Saudi HD pattern. However, different categories may be included, assuming patterns are arranged according to a clear measurement scale and are put in an order that reflects the *pattern language* system.

6.5.5 Reflection on the design methods adapted for the SHDM

The SHDM will be predominantly based on the *pattern language* design system; yet, different design approaches should be integrated within the model's structure (Figure 6.1). The integration aims to maximise the model's potential and assure its capability to deliver enhanced

and sufficient house designs. Synchronising different design approaches with different objectives minimises potential gaps in the design process. Moreover, the different approaches should be synched in a manner that generates a coherent and smooth design process that is easily understood, adopted and implemented. Figure 6.4 illustrates an extended demonstration of the SHDM' structure.

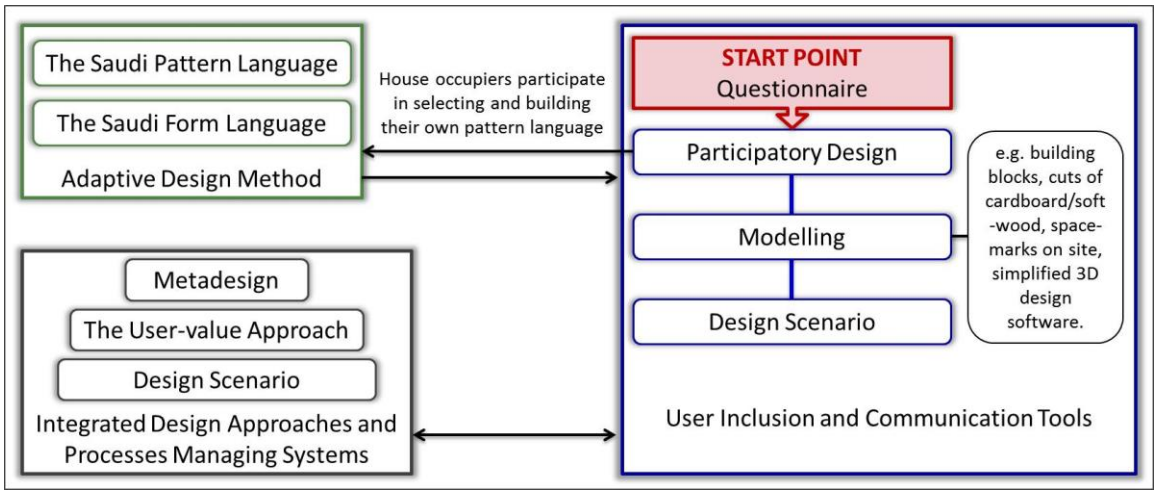


Figure 6.4 The SHDM

This approach, i.e. by integrating different models, provides an answer to the question raised earlier in the literature review regarding design theories and methods (see section 2. 13). The question asked was whether architecture is conceptually the same, thereby allowing application of a single broad design approach that may be suggested/applied for any of its types.

The development process of the SHDM structure that in order to achieve a HD that is successful on all levels, the design approach used should not focus on a single objective, as represented by most design frameworks. In addition, any proposed architectural design approach should consider the practicality of its application in an authentic context. The design process suggested should complement existing practices and available technologies. Only then can a design method be deemed useful and adaptable.

On the other hand, if a design method is based on a holistic group of objectives, rather than solo objectives, then it can be applied to any type of building; nevertheless, the fact that some modifications may be required, this should be perceived as a positive feature exhibiting the flexibility in the design model.

This discussion leads to the final development stage of the proposed SHDM, as the following section discusses the strategy and process toward its empirical creation.

6. 6 The SHDM (Saudi House Design Model)

The development of the SHDM in this section signifies the final stage in this investigation. In this section, the researcher suggests a process that involves developing a comprehensive and extensive design methodology, aimed at enhancing the design of houses in SA by enhancing the design process.

Although the development of the design model, namely the SHDM, demands substantial effort in terms of forming and synchronising its components, when completed, the result will prove to be of great value. This value is not only represented in the provision of the design process itself, but also in the comprehensive components and explanations that will be demonstrated in the patterns; i.e. via a thorough description of the patterns found in Saudi house designs. The Saudi HD patterns may be adapted for other research and development purposes, such as in studies evaluating the quality of specific house designs, or for developing other aspects related to the residential environment.

However, it should be noted that, while the primary concern here is the enhancement of house designs, the relationship between houses and their surrounding contexts, the environment and urban settings should not be overlooked in any design or development application. The following paragraphs explain the SHDM development process requirements, and these are presented in points to reflect the process by which it should be developed:

1. The model development team

The development of the model demands that a team comprising a variety of residential design stakeholders produces it. However, the level of involvement varies between members; in particular, depending on their roles and the stage of development in which they are involved. Professionals who are aware of overall practice must achieve the management of the process and the end product.

This team should include: 1) architects with experience in residential designing; 2) academics with architectural, social and design process knowledge; 3) representatives from architectural organising sectors; 4) residential architecture developers; and 5) homeowners and prospective self-built house owners (i.e. individuals who are intending to build their own houses). After constructing a team, especially the members needed in the initial stages, model development starts.

2. Developing the Saudi HD pattern language

This stage signifies what is presented in Alexander's pattern language. The initial phase is to apply a filtering process to Alexander's patterns in order to extract those that apply to Saudi house designs and their context (e.g. the patterns 133 STAIRCASE AS A STAGE AND 145 BULK STORAGE) and the ones that do not (e.g. pattern 140 PRIVATE TERRACE ON THE STREET). This will be followed by a thorough examination of the patterns selected as part of the Saudi pattern language, in order to modify essential specifications to reflect the Saudi HD context and needs (e.g. the pattern 122 BUILDING FRONT is a Saudi pattern but this needs modification to reflect Saudi socio-cultural needs and building regulations). The findings from this research (Chapter 4 and Chapter 5), are intended to assist in the selection of patterns and the modification process.

As the extraction and modification of Alexander's patterns is completed, the development of Saudi specific patterns commences. This is the most extensive and demanding stage. In this stage, the need to interact and collaborate with the majority of the model development team takes effect. First, a preliminary list of patterns should be formed. The set of patterns presented in section 5. 2 is then to be adapted to extract and reform those patterns that can be included as patterns for designing houses. On the other hand, the conceptual model presented in section 5. 3 will assist in organising the list of patterns formed.

For example, the concept explaining (T1) 1.5 *Changes to approaches to housekeeping* (p. 138), can be adapted to form the Saudi HD pattern: a room for the housekeeper. Different concepts from the research findings; however, mention other features related to housekeepers. Therefore, the patterns in the findings here are to be adapted rather than adopted for the design model. The concept about (T1) 3.2 *The outdoor space* (p. 164), which provides information about rooms built in the outdoor area of Saudi houses (e.g. molhaq, and driver's room) offers another example of how the research findings may be employed to assist in the development of the Saudi HD pattern language. This concept may be used to modify Alexander's patterns: 163 OUTDOOR ROOM, 112 ENTRANCE TRANSITION, and 113 CAR CONNECTION.

When a substantial list of Saudi HD patterns is formed, then, the details of each pattern should be discussed by the team members to assure the validity and abstractness of the information presented. A constant comparative analysis between the related patterns should be carried out in-line with the discussion process, to maintain a clear order and sequence (this includes the patterns withdrawn from Alexander's set). As this comprehensive activity reaches a satisfying and representative level, the patterns are then grouped and articulated in a format similar to

Alexander's (see section 6.3.1). By this phase, the Saudi HD pattern language is complete, and a final review by those members not involved in the development should take place to insure there are no errors or gaps.

3. Integrating the different design approaches in the model's process

The different design approaches that were suggested as part of the SHDM (discussed in section 6. 5) are to be synchronised at this stage to deliver a clear structuring of the design process. The following paragraphs explain where each approach should fall within the design process and subsequently in the SHDM:

Questionnaires are to be presented by the architect/designer to initiate the process, they may be in hard-copy or electronic form. A template of suggested questions, and details about how the information obtained can benefit the design process, are best produced by the SHDM development team. The content, however, may then be modified by the architect/designer as necessary. Generally, the questionnaire should seek out basic information about the project, the users, the plot and the budget. Further details will be generated through the pattern selection process.

The inclusion of users not only refers to the homeowner, but all the members that will be living in the house. After the architect obtains information about the members expected to live in the house (through the questionnaire), he/she should discuss the possibility of debating the design with all members and offer appropriate communication media (e.g. face-to-face, telephone, live on-line chats, etc.). The adoption of different communication and design tools should take place during and after selection of the pattern language.

The design process should all be documented, whether in a design scenario or applying any other useful format that the architect prefers. This will include the subjects discussed, the materials used, and the transition between the project stages. The SHDM team may assist in providing a template for a design scenario that can help start this activity, then each architect can amend it according to his/her preferred work style.

Saudi HD patterns are to be presented and explained to the homeowner (and any accompanying members) immediately after agreeing to take on the project, and upon receiving answers to the preliminary questionnaire. At this stage, a pattern language is formed following the process presented by Alexander in *A Pattern Language* (see section 6.3.2 for a brief demonstration). As the language is formed, the design process takes place with the users' involvement until an agreeable HD is reached. Nevertheless, the *form language* should also be discussed alongside

the design development process, i.e. each space or component added to the design should be simultaneously discussed in terms of its form (shape, size, designs within, relation to adjacent components, etc.), in which an *adaptive design* can be achieved (see section 6.5.1).

It is the architect's responsibility to encourage and produce a HD in compliance with the open-design concept suggested by the Metadesign approach (see section 6.5.3). This design approach (examples demonstrated in section 6.5.3) should be explained to the homeowner immediately before creating the design, i.e. after forming the pattern language for his/her house. Once the homeowner understands the approach and its consequences on the design outcomes (e.g. not having a confirmed allocation of certain design components like rooms doors), he/she can decide to what extent this approach is applied.

At this point, all suggested design approaches have been effectively integrated into the SHDM.

4. Presenting the SHDM

As the development of the SHDM is established, the development team should present the Saudi HD pattern language, and the explanation of its adaption process, in a clear and easy to follow format.

Offering the model in an electronic (computerised) format can help both the presentation and the practicality of the design model. This is achieved by developing a software programme that can assist its users throughout the process, from completing the questionnaire to building a pattern language; to add to its significance, a simple HD modelling system may be included. Providing an electronic system that can guide its users throughout the design process is a substantial advantage that can only be obtained through such a format. For example, once the most important pattern is selected, the programme can automatically direct the user to smaller patterns linked to the selected pattern, this programme may also assist in keeping track of the process and documenting it.

This is to say, that the presentation of the model plays a vital role in promoting its adoption by architects and homeowners alike. It also enhances professionalism in the practice processes, as it offers a highly organised design system that can be personalised to the architect's preferences and then used many times.

6. 7 Summary and conclusion

An extensive and elaborate discussion of the research outcomes was presented in this chapter. Through this discussion, the form and content of the outcomes were explained and validated in

terms of their theoretical constitution. Theories about *sets*, *patterns* and *pattern languages* were adopted as key concepts in the discussion. The argument led to the conclusion that the outcomes developed represented the pattern language of the privately built houses in SA.

Subsequently, the theoretical outcomes were employed and developed further in practical terms; this was to ensure their value and applicability in architectural practice, in addition to achieving the research objectives. The SHDM proposal was presented accordingly.

The SHDM is a design model to be adopted by those architects who design privately built houses. It aims to enhance the design of houses in SA on a number of levels; mainly functionally, aesthetically and socio-culturally. Therefore, the model was formed around a number of design approaches from the field of architecture and other design related disciplines, with the preliminary design approach being based on Alexander's *pattern language* design system. The findings and outcomes generated by this research play an integral part in the development of the proposed model. Finally, the researcher offered a detailed process, explaining the methods employed towards developing, presenting and adapting the SHDM.

At this stage, the primary aim and objectives of the research have been established, and the following chapter will provide a brief presentation of the overall conclusions and the recommendations for further research.

Chapter 7
Conclusion and Recommendations

7. 1 Introduction

The aims and objectives of this research have been met. In this chapter, a brief review of what has been accomplished is presented through a demonstration of the researcher's contribution to this field of knowledge. This is followed by the general conclusions reached from the investigation. Additionally, this research has revealed and identified a number of searchable phenomena and issues, which could benefit from further examination, some examples of such issues and phenomena are provided throughout this chapter. The final section, however, suggests future directions in which this research's outcomes can be expanded

7. 2 Research contribution

This research has mainly been developed from an architectural design perspective. Its focus was on examining and enhancing that particular field of knowledge and its practices and on benefiting the architectural community. Many contributions have been made throughout the course of this research; however, the primary contributions made, can be explained in reference to Biggs and Büchler (2008) criteria regarding what constitutes research.

Biggs and Büchler (2008) detailed the defining criteria of design and architectural research, they examined different criteria and definitions explaining what constitutes a doctoral study. In conclusion, they proposed three necessary and sufficient conditions for a work to be described as research (Biggs and Büchler 2008: 89–91), these are:

1. **Dissemination**: or advancing knowledge, which is when research influences the activities of other professionals in the field. An advance, therefore, happens when one researcher's work is disseminated to others who benefit from it.
2. **Originality**: research must produce something that was not previously known or interpreted in the same way or claimed by anyone previously.
3. **Context**: research must be placed in a context. Contextualising research, supports arguments about originality, it also clearly establish which modes of understanding it develop from, and which consequently explain how knowledge can be used, for example, by other researchers, who can develop alternative uses or interpretations through which they would then claim originality.

In this research, these three conditions were encountered as follows:

1. Dissemination

There are many outcomes generated through the medium of this research and by which further advances may take place. This is mostly signified in regard to the final development, i.e. the SHDM; the model in itself allows for different forms of adaptation. For example, the model's concept and suggested development and application methods, can be adapted and extended to other types of architecture (e.g. Saudi office and service buildings, housing projects, etc.), and different related fields (e.g. urban design and interior design). Additionally, the model's framework and its associated application methods may be adapted to apply to other global regions.

Another area where dissemination criterion has a strong influence is through research findings (presented in Chapter 4). In the findings, a large set of categories, explaining the subjects, phenomena and issues associated with residential architecture and its context were identified; however, many of the phenomena and issues identified would benefit from further investigation. The issues were demonstrated in different sections of the research (e.g. (T2) 6.4, (T2) 7.3 and (T2) 9). Some of the subjects include:

1. Examinations of the specific socio-cultural phenomena related to residential architecture (e.g. hospitality customs and their manifestations in Saudi houses, the influence of housekeepers on the design of Saudi houses, changes in the use of space in a house following changes in the structure of the family living in it, etc.);
2. Design processes in architectural offices;
3. Issues identified within architectural practices, such as determining project fees and issues associated with employing foreign architects;
4. The practicing environment for female architects/designers in SA, as a rapid growing trend;
5. The issue identified in the relationships between the architectural organising sectors in SA;
6. Reasons behind not enforcing the Saudi building code;
7. Miscellaneous issues related to building regulations and their application and monitoring systems;
8. The organisation and management of building contractors and the systems available (or lacking) for accrediting builders and defining their roles; and
9. The relationship between architectural education and practice, and ways of linking them more efficiently and practically.

2. Originality

There are a number of outcomes that allow the researcher to claim originality, above all:

1. The SHDM: the design model developed through the discussions and outcomes in this research have not been presented in any previous study. The objectives from the model, the combination of methods used in its structure, and its production and application processes are the primary original features.
2. The open approach and the methods adopted when examining the research problem (section 1. 1) have not been used in an architectural study sharing similar objectives. In this approach, the research problem was examined by means of Grounded Theory methods, and the data was mainly gathered through theoretically sampled interviews, i.e. not based on a predetermined list of participants from a specific sector. This inductive method supported the broad interest of the investigation, in which the objective was to allow HD concepts to emerge, rather than a fixed set of variables or a hypothesis, then examining them against another theory for verification. Such deductive methods may have limited the prospects for identifying the extensive range of concepts/patterns constituting HD in SA.
3. The three forms of research outcomes presented in Chapter 5, could be adapted for multiple purposes (as explained in Chapter 5, and confirmed in practice in Chapter 6). These outcomes equally incorporate both architectural and socio-cultural concepts and phenomena in their structures, which is a feature not found in architectural design studies or developed frameworks/theories; as the majority of studies demonstrate an interest in either design practice or social manifestations, but are not incorporated with an equal level of interest.

In summary, the three major original contributions in this research are represented by: 1) the final developed model; 2) the research methodology; and 3) the incorporation of architectural practice and socio-cultural aspects in its process and outcomes.

3. Context

This research was examined in a well-defined context. The general context was privately built houses in Saudi Arabia; whereas, the area of special interest was at the design generation stage of privately built houses and the associated socio-cultural manifestations, in which information was obtained through field studies and by a group of key stakeholders. Moreover, research motivations and audience were clearly stated in Chapter 1, which adds to the definition of the research's context.

7. 3 Conclusion

Through working this thesis, the researcher has attempted to understand the phenomenon of designing private houses in SA. Studies consulted have demonstrated the rapid changes in the manner and form in which houses are being designed and built in the region. Many other studies have examined and tracked these changes and argued how they have affected cultural and social characteristics and behaviours. However, the majority of studies examining residential architecture in SA were of an analytic and descriptive nature, with few discussing the design processes and methods towards improving them. Therefore, in this research, the goal was to move beyond a descriptive and analytic approach and develop a design model to enhance the design of privately built houses in the region.

In order to understand the context of the issues, a comprehensive exploration of the phenomenon was undertaken, by means of field studies and interviews with a sample from key stakeholders. A comprehensive analysis was performed on the gathered data, and 23 categories referring to the design of residential architecture in SA were identified as a result. These categories referred to two main themes: 1) socio-cultural categories (six categories); and 2) empirical categories (11 categories). The findings were explained and discussed by means of the constituting concepts and socio-cultural phenomena, which were based (grounded) on the data gathered. Meanwhile, an additional set of supporting categories (six categories) were also identified and briefly described in terms of their relationship to HD.

These findings provided a detailed insight into SA's residential architectural design, which was associated with evidence and examples from the investigation. They were then refined and present in three forms of research outcomes: 1) a structure demonstrating the concepts identified; 2) a conceptual model describing the relationship between the categories identified; and 3) a theoretical explanation of the conceptual model/the phenomena. These research outcomes therefore signified the pattern language of HD in SA. The concepts identified represent the patterns, whereas the conceptual model explained the relationships; hence, forming the language that links the patterns.

In regard to the GTM, although a theory was not fully established in this research, the methodology itself proved valuable in terms of satisfying the research objectives, also offering a comprehensive understanding of the examined subject and its compositions, which was a successful achievement. Nevertheless, there are many phenomena within SA's architectural context that are in desperate need of theorising, to better understand their conditions and consequences. Theorising phenomena offers researchers and developers an opportunity to solve

issues that arise more effectively, and to adopt GT methodology, which is (based on this researcher's experience) a practical and efficient approach to achieving this recommendation.

Returning to the principal objectives of this investigation, this research went a step further in its outcomes, in order to fulfil its aim of suggesting a working model that would effectively enhance HD in SA. To achieve this, the research outcomes were first verified and discussed in relation to relevant theories. It was concluded that the outcomes (as mentioned above) represented the pattern language of HD in SA. Afterwards, the SHDM was developed based on Alexander's Pattern Language system. This development was established on a number of broad design objectives in which existing design issues could be avoided. These objectives were attained by combining different design approaches in the proposed model. The result was a multifaceted SHDM connecting the benefits of a number of design approaches; it is therefore expected to help enhance the design process and outcomes for Saudi houses.

For house designs to truly improve in SA, the architectural context requires serious improvement. This can be accomplished only through the guidance, support and management of architectural organising sectors in SA. Key improvements need to focus on planning and building systems and their relationships to one another, building codes and regulations and their execution and monitoring systems, and the service standards in architectural practices. Only then will the built environment allow for a significant improvement, and insure the wellbeing of society.

7. 4 Recommendations for further research

The main objective of this research was to understand the context of privately built houses designed in SA; then, through this understanding, develop a working model towards enhancing HD. The following stage of this research is to start constructing the proposed SHDM by applying the suggested process. For this to occur, a number of supporting studies need to be carried out in order to establish a solid set of patterns. The process for developing this project will require constant review and evaluation to ensure its effectiveness and practicality. Initial testing on real cases is also important to evaluate both the model/process and outcomes. After testing, the model can then be promoted to architects and adopted.

In addition, it is hoped that the outcomes of this research will be adapted and applied to other architectural building types and across different regions globally (As suggested in section 7. 2, p.312).

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Appendixes

WEGER ARCHITECTS Design Questionnaire 1/11

What's REALLY important:

One sentence for each of you...

What is the very essence of the home you can see in your mind and feel in your heart?

Who are the people who will live in the house, names and ages:

In a few words, describe yourselves

If you build it, who will come?

Source: Weger Architects (2004)

DESIGN QUESTIONNAIRE FOR YOUR NEW HOME

I. SITE INFORMATION

A. Do you already own (or plan to own) a piece of property? (*Please give description*)

_____

_____

If so, I will need you to supply survey information such as:

1. Topographic survey (*which shows the contour of the land)*
2. Tree survey *(if any)*
3. Site plan *(showing all easements and building set back lines)*

If you do not have this information, I can help you in obtaining it. If you do not already own a lot, I would be happy to help you select one.

B. Are there any Architectural Control Restrictions which govern your property? If so, could you please supply a copy of the covenants so I may review.

C. Will you want any major site improvements? *(Tennis courts, pools, terraces, retaining walls, etc.)*

_____

II. EXTERIOR

A. What type of exterior elevation do you desire? *(European, Traditional, Contemporary, etc.)*_____

_____

B. Would you like a one story, two stories or split level home?_____

C. What exterior materials do you want? *(Stucco, brick, wood, etc.)*_____

_____

D. Would you like a front or back porch?_____

E. Main floor wall heights._____

F. Any other rooms with different wall heights?_____

G. Do you prefer large picture windows?_____

Source: Prull Custom Designs (n.d.)

Examples of interview questions

The following paragraphs demonstrate some of the guiding or common questions asked during interviews, and outline the reason behind them and their significance to the investigation (more questions emerged during interviews):

1. Questions put to architects

What is the percentage of residential projects carried out at the office in relation to other building types?

All architects were asked about the type of projects they worked on and the percentage of residential projects and their types. This was to ensure familiarity with the project capacity of the office and to measure it in accordance to other data obtained (i.e. the number of employees and average fees). Linking this data and comparing it between offices assists in providing a more holistic understanding of individual practices, as well as variations between them.

What is the average handover period of a residential project?

The answer to this question (in association with other data, such as fees and design examples) assisted in providing an understanding of whether time spent on a project can indicate the quality of work and the complicity or smoothness of the design process.

Questions related to the design process

These included, but were not confined to, questions concerning clients' characteristics, along with the questions put to them during initial meetings and throughout the project, communication tools, design resources, styles preferred and general HD characteristics, etc. Replies to these questions provided both empirical and theoretical data and knowledge concerning the HD phenomenon, its process and the architectural practice in general.

2. Questions asked to homeowners

How long did it take to receive the finalised package (i.e. the project's set of drawings and associated permissions)?

This question not only aimed at gaining temporal data, but also to justify the time spent on the project, whether it was relatively long or short, through following up the answer with the

question “how was the time spent and why did it take this long?”. This generated diverse and rich detailed information.

How did you explain your requirements to the architect?

This was an open and abstract question put early in the session and aimed at understanding clients’ approach in a residential project. Depending on the context in which the question was asked, in a number of cases the question was “how did the discussion start with the architect?”

The immediate answer to this question provided the researcher with an indication of the clients’ level of knowledge concerning the architectural/HD process. This was followed by asking them how they felt about the processes as an overall experience, in relation to certain details.

What changes have you made to the architect’s first layout proposal?

This question measures the ways in which clients describe their needs and how far the architect satisfied these after their first meeting, i.e. how far architects understood the client’s requirements and what might have been the reasons behind any dissatisfaction. Through the participants’ replies, the researcher was able to identify communication variables used in the design process.

Appendix 3 House Design Questionnaires from the Field Study

Residential Questionnaire

Date: / /

Client: DHAHRAN EMMAR

Villa Type: _____

Please fill up this form.

1. **Construction budget, excluding architectural and consultant fees.** _____ SR
2. **Elevation styles:** □ Modern □ Spanish □ Mediterranean □ Morocco □ Eastern Province traditional □ others _____
3. **Required interior design** □ No □ Yes, When _____
4. **Space Program:**

Ground floor	_____ m²	First floor _____ m²	Roof Deck _____ m²		
Ground Floor	□ No. of bedrooms _____		□ No. of Toilets _____		
	□ Majles (Male) _____ m²		□ Female Sitting Area _____ m²		
	□ Dining Area _____ m²		□ Living Area _____ m²		
	□ Open Kitchen _____ m²		□ Dirty Kitchen _____ m²		
	□ Male Toilet _____ m²		□ Female Toilet _____ m²		
	□ Storage _____ m²		□ others _____ m²		
First Floor	□ No. of bedrooms _____		□ No. of Toilets _____ m²		
	□ Master bedroom _____ m²		□ Sitting Area _____ m²		
	□ Kitchen _____ m²		□ Storage _____ m²		
Roof Deck	□ Maid's Room _____ m²		□ Laundry _____ m²		
	□ Storage _____ m²		□ Others _____ m²		

5. **Privacy Level** □ Women sitting area combined with living area □ Kitchen opened to living area
6. **Toilet**

	Yes	No	Remarks
Toilets attached to master bedroom	□	□	_____
Combined toilet for two bedrooms	□	□	_____
Jacuzzi in master bedroom toilet	□	□	_____
Bidet for toilets	□	□	_____
Shower tray for maid and driver	□	□	_____
Built in Cabinet	□	□	_____

1/2

7. **Additional Requirements**

	Yes	No	Remarks
Basement	□	□	_____
Diwaniah	□	□	_____
Guest House	□	□	_____
Driver's Room	□	□	_____
Separate Office Room	□	□	_____
Swimming Pool	□	□	_____
Barbecue Area	□	□	_____
Sports Facilities	□	□	_____
Water Fountain	□	□	_____
Walk-in Closet	□	□	_____
Built-in Cabinet	□	□	_____
Data Outlet in every room	□	□	_____
WIFI	□	□	_____
Telecommunication in every room	□	□	_____
Solar Water Heater	□	□	_____
Centralized Water Heater	□	□	_____
Security System (CCTV)	□	□	_____
Music System	□	□	_____
Parking Rollup Door Double (Motorized)	□	□	_____
Roof Garden with watering system	□	□	_____
Smart House	□	□	_____
Green Building (LEED or BREEM)	□	□	_____

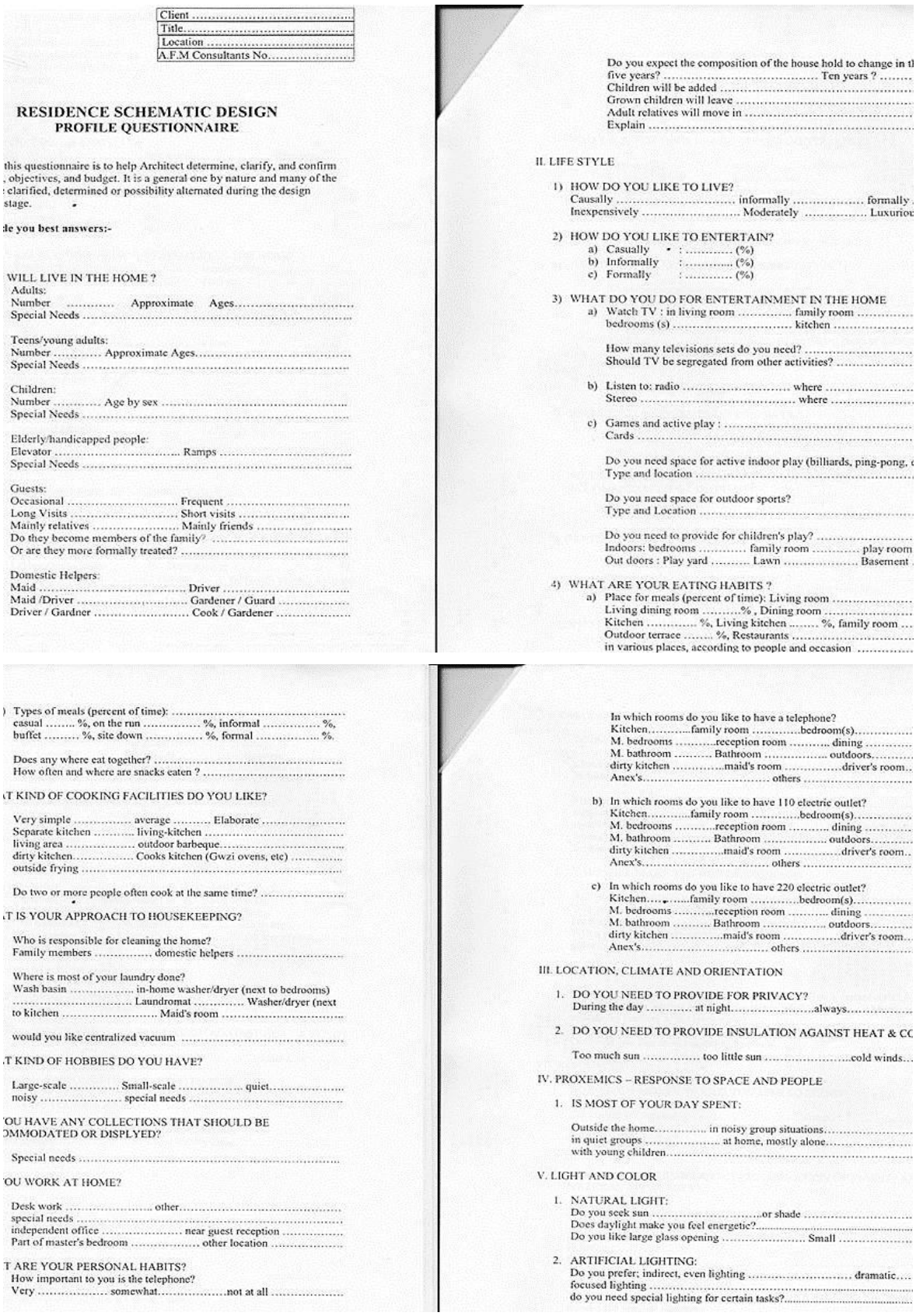
8. **Site information**

	Yes	No	Remarks
Municipal Raw Water	□	□	_____
Municipal Drainage	□	□	_____
Saudi Electric Co. (SEC)	□	□	_____
Saudi Telephone Co. (STC)	□	□	_____
Topographic Survey	□	□	_____
Geotechnical Information	□	□	_____
Municipality survey land no. (kroki)	□	□	_____

9. **Sweet water line** Required in □ Kitchen □ Shower □ Wash Basin □ Others _____
10. **Future Expansion** □ Ground Floor □ Roof Deck □ Not Required
11. **Air-conditioning**
    - □ Window type
    - □ Mini –split (FCU)
    - □ Central A/C – Ducted Split
    - □ Central A/C - Package type

2/2

Source: Interviewee A3 (2010)



Client .....
Title.....
Location .....
A.F.M Consultants No.....

RESIDENCE SCHEMATIC DESIGN
PROFILE QUESTIONNAIRE

this questionnaire is to help Architect determine, clarify, and confirm
, objectives, and budget. It is a general one by nature and many of the
: clarified, determined or possibility alternated during the design
stage.

le you best answers:-

WILL LIVE IN THE HOME ?
Adults:
Number ..... Approximate Ages.....
Special Needs .....

Teens/young adults:
Number ..... Approximate Ages.....
Special Needs .....

Children:
Number ..... Age by sex .....
Special Needs .....

Elderly/handicapped people:
Elevator ..... Ramps .....
Special Needs .....

Guests:
Occasional ..... Frequent .....
Long Visits ..... Short visits .....
Mainly relatives ..... Mainly friends .....
Do they become members of the family? .....
Or are they more formally treated? .....

Domestic Helpers:
Maid ..... Driver .....
Maid /Driver ..... Gardener / Guard .....
Driver / Gardner ..... Cook / Gardener .....

Do you expect the composition of the house hold to change in t
five years? ..... Ten years ? .....
Children will be added .....
Grown children will leave .....
Adult relatives will move in .....
Explain .....

II. LIFE STYLE

1) HOW DO YOU LIKE TO LIVE?
Causally ..... informally ..... formally
Inexpensively ..... Moderately ..... Luxurio

2) HOW DO YOU LIKE TO ENTERTAIN?
a) Casually : ..... (%)
b) Informally : ..... (%)
c) Formally : ..... (%)

3) WHAT DO YOU DO FOR ENTERTAINMENT IN THE HOME
a) Watch TV : in living room ..... family room .....
bedrooms (s) ..... kitchen .....

How many televisions sets do you need? .....
Should TV be segregated from other activities? .....

b) Listen to: radio ..... where .....
Stereo ..... where .....

c) Games and active play : .....
Cards .....

Do you need space for active indoor play (billiards, ping-pong,
Type and location .....

Do you need space for outdoor sports?
Type and Location .....

Do you need to provide for children's play? .....
Indoors: bedrooms ..... family room ..... play room
Out doors : Play yard ..... Lawn ..... Basement

4) WHAT ARE YOUR EATING HABITS ?
a) Place for meals (percent of time): Living room .....
Living dining room .....% , Dining room .....
Kitchen ..... %, Living kitchen ..... %, family room ...
Outdoor terrace ..... %, Restaurants .....
in various places, according to people and occasion .....

) Types of meals (percent of time): .....
casual ..... %, on the run ..... %, informal ..... %,
buffet ..... %, site down ..... %, formal ..... %.

Does any where eat together? .....
How often and where are snacks eaten ? .....

T KIND OF COOKING FACILITIES DO YOU LIKE?

Very simple ..... average ..... Elaborate .....
Separate kitchen ..... living-kitchen .....
living area ..... outdoor barbeque.....
dirty kitchen..... Cooks kitchen (Gwzi ovens, etc) .....
outside frying .....

Do two or more people often cook at the same time? .....

T IS YOUR APPROACH TO HOUSEKEEPING?

Who is responsible for cleaning the home?
Family members ..... domestic helpers .....

Where is most of your laundry done?
Wash basin ..... in-home washer/dryer (next to bedrooms)
..... Laundromat ..... Washer/dryer (next
to kitchen ..... Maid's room .....

would you like centralized vacuum .....

T KIND OF HOBBIES DO YOU HAVE?

Large-scale ..... Small-scale ..... quiet.....
noisy ..... special needs .....

OU HAVE ANY COLLECTIONS THAT SHOULD BE
OMMODATED OR DISPLYED?

Special needs .....

OU WORK AT HOME?

Desk work ..... other.....
special needs .....
independent office ..... near guest reception .....
Part of master's bedroom ..... other location .....

T ARE YOUR PERSONAL HABITS?
How important to you is the telephone?
Very ..... somewhat.....not at all .....

In which rooms do you like to have a telephone?
Kitchen.....family room .....bedroom(s).....
M. bedrooms .....reception room ..... dining .....
M. bathroom ..... Bathroom ..... outdoors.....
dirty kitchen .....maid's room .....driver's room..
Anex's..... others .....

b) In which rooms do you like to have 110 electric outlet?
Kitchen.....family room .....bedroom(s).....
M. bedrooms .....reception room ..... dining .....
M. bathroom ..... Bathroom ..... outdoors.....
dirty kitchen .....maid's room .....driver's room..
Anex's..... others .....

c) In which rooms do you like to have 220 electric outlet?
Kitchen.....family room .....bedroom(s).....
M. bedrooms .....reception room ..... dining .....
M. bathroom ..... Bathroom ..... outdoors.....
dirty kitchen .....maid's room .....driver's room..
Anex's..... others .....

III. LOCATION, CLIMATE AND ORIENTATION

1. DO YOU NEED TO PROVIDE FOR PRIVACY?
During the day ..... at night.....always.....

2. DO YOU NEED TO PROVIDE INSULATION AGAINST HEAT & CO

Too much sun ..... too little sun .....cold winds...

IV. PROXEMICS – RESPONSE TO SPACE AND PEOPLE

1. IS MOST OF YOUR DAY SPENT:

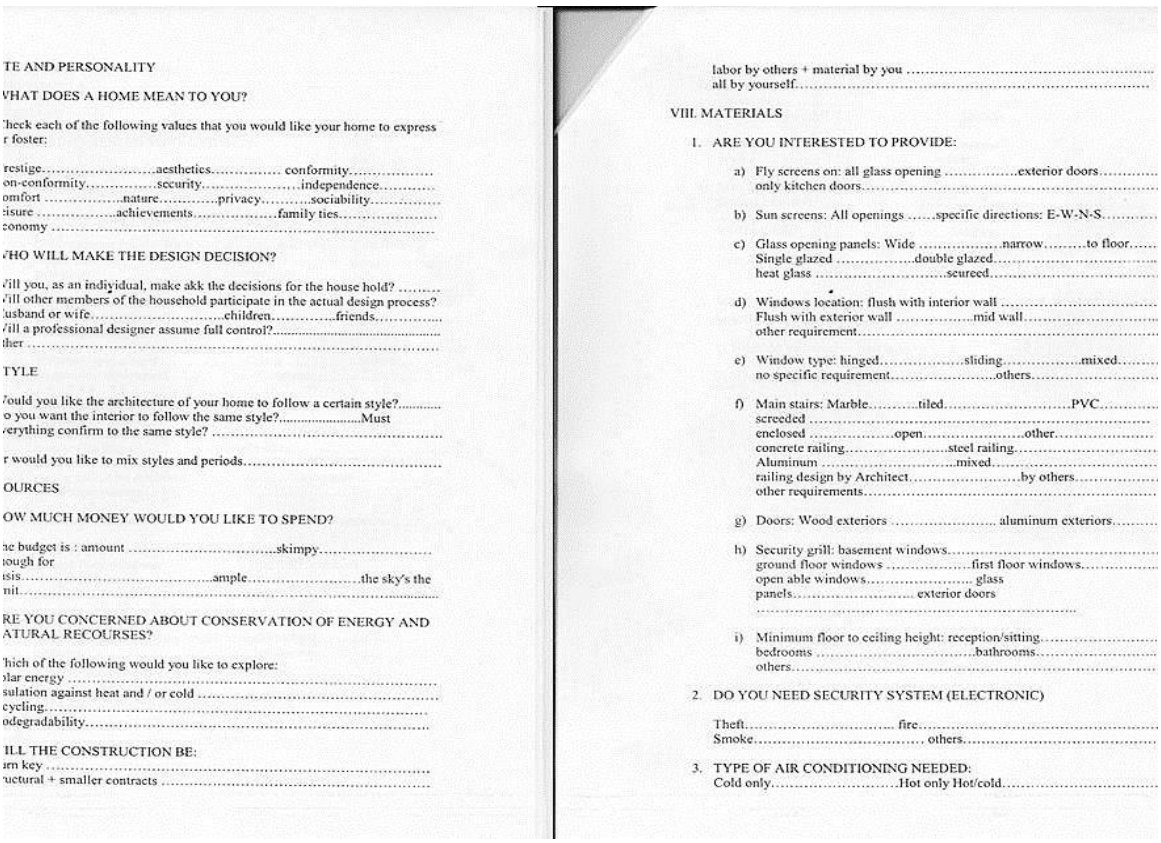
Outside the home..... in noisy group situations.....
in quiet groups ..... at home, mostly alone.....
with young children.....

V. LIGHT AND COLOR

1. NATURAL LIGHT:
Do you seek sun .....or shade .....
Does daylight make you feel energetic?.....
Do you like large glass opening ..... Small .....

2. ARTIFICIAL LIGHTING:
Do you prefer; indirect, even lighting ..... dramatic....
focused lighting .....
do you need special lighting for certain tasks?.....

Source: Interviewee A8 (2010) [part1]



TE AND PERSONALITY

VHAT DOES A HOME MEAN TO YOU?

Check each of the following values that you would like your home to express r foster:

restige……aesthetics…… conformity……
on-conformity……security……independence……
omfort ……nature……privacy……sociability……
isure ……achievements……family ties……
conomy ……

VHO WILL MAKE THE DESIGN DECISION?

Vill you, as an indiyidual, make akk the decisions for the house hold? ……
Vill other members of the household participate in the actual design process?
lusband or wife……children……friends……
Vill a professional designer assume full control?……
ther ……

TYLE

Vould you like the architecture of your home to follow a certain style?……
o you want the interior to follow the same style?……Must
verything confirm to the same style? ……

r would you like to mix styles and periods……

OURCES

OW MUCH MONEY WOULD YOU LIKE TO SPEND?

ne budget is : amount ……skimpy……
ough for
isis……ample……the sky's the
nit……

RE YOU CONCERNED ABOUT CONSERVATION OF ENERGY AND ATURAL RECOURSES?

Vhich of the following would you like to explore:
olar energy ……
sulation against heat and / or cold ……
cycling……
odegradability……

ILL THE CONSTRUCTION BE:
an key ……
uctural + smaller contracts ……

labor by others + material by you ……
all by yourself……

VIII. MATERIALS

1. ARE YOU INTERESTED TO PROVIDE:

a) Fly screens on: all glass opening ……exterior doors……
only kitchen doors……

b) Sun screens: All openings ……specific directions: E-W-N-S……

c) Glass opening panels: Wide ……narrow……to floor……
Single glazed ……double glazed……
heat glass ……scureed……

d) Windows location: flush with interior wall ……
Flush with exterior wall ……mid wall……
other requirement……

e) Window type: hinged……sliding……mixed……
no specific requirement……others……

f) Main stairs: Marble……tiled……PVC……
screeded ……
enclosed ……open……other……
concrete railing……steel railing……
Aluminum ……mixed……
railing design by Architect……by others……
other requirements……

g) Doors: Wood exteriors …… aluminum exteriors……

h) Security grill: basement windows……
ground floor windows ……first floor windows……
open able windows…… glass
panels…… exterior doors
……

i) Minimum floor to ceiling height: reception/sitting……
bedrooms ……bathrooms……
others……

2. DO YOU NEED SECURITY SYSTEM (ELECTRONIC)

Theft…… fire……
Smoke…… others……

3. TYPE OF AIR CONDITIONING NEEDED:
Cold only……Hot only Hot/cold……

a) Centralized: Preferred brand……
packaged……split……
indicate where: All ……specific……

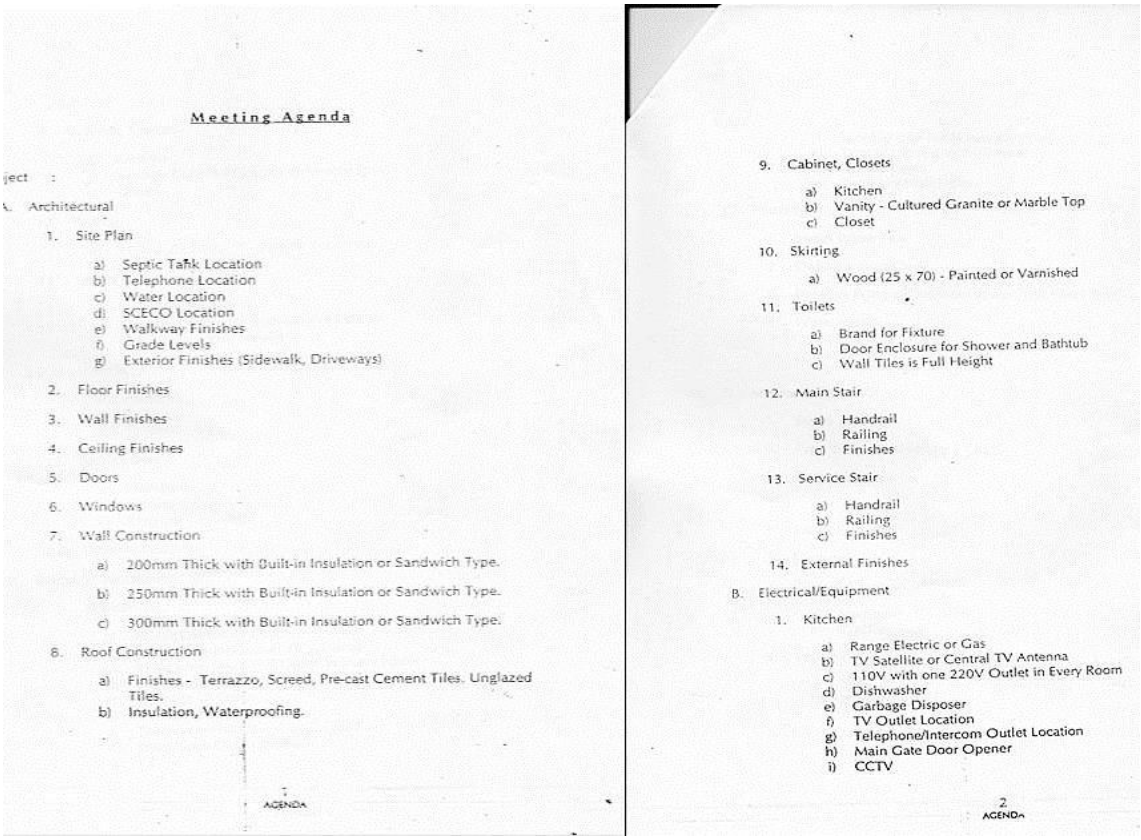
Type of grills: Linear …… normal ……
Wall ……ceiling……

b) Mini Split: Preferred brand ……
Ceiling mounted……location……
……
wall mounted……location……
……
floor mounted ……location……
……

c) Window: preferred brand……
Location……

IX. 1. When do you want to start construction
……
2. When do you want expect to move-in
……

Source: Interviewee A8 (2010) [part2]



Meeting Agenda

ject :

A. Architectural

1. Site Plan
   a) Septic Tank Location
   b) Telephone Location
   c) Water Location
   d) SCECO Location
   e) Walkway Finishes
   f) Grade Levels
   g) Exterior Finishes (Sidewalk, Driveways)
2. Floor Finishes
3. Wall Finishes
4. Ceiling Finishes
5. Doors
6. Windows
7. Wall Construction
   a) 200mm Thick with Built-in Insulation or Sandwich Type.
   b) 250mm Thick with Built-in Insulation or Sandwich Type.
   c) 300mm Thick with Built-in Insulation or Sandwich Type.
8. Roof Construction
   a) Finishes - Terrazzo, Screed, Pre-cast Cement Tiles. Unglazed Tiles.
   b) Insulation, Waterproofing.

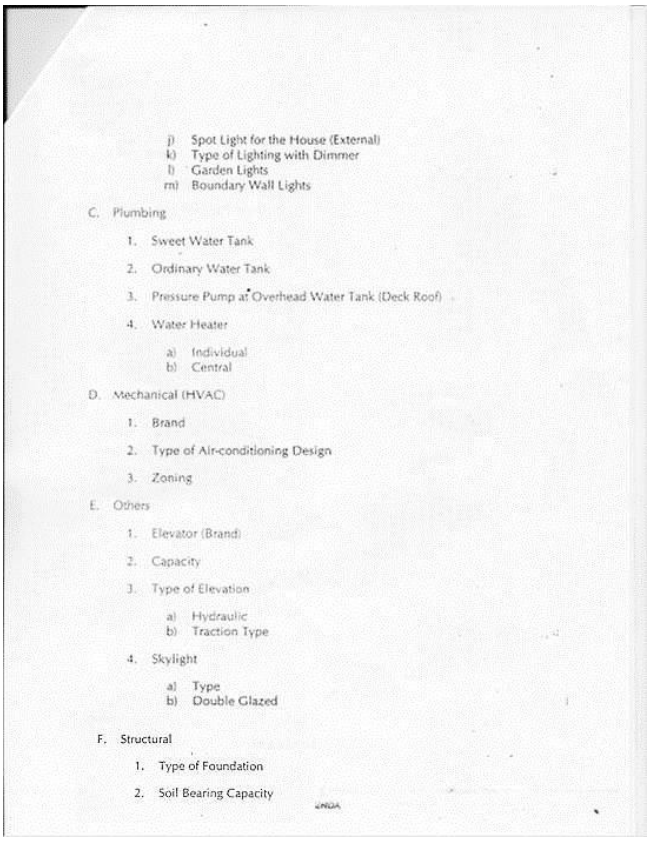
AGENDA

9. Cabinet, Closets
   a) Kitchen
   b) Vanity - Cultured Granite or Marble Top
   c) Closet
10. Skirting
    a) Wood (25 x 70) - Painted or Varnished
11. Toilets
    a) Brand for Fixture
    b) Door Enclosure for Shower and Bathtub
    c) Wall Tiles is Full Height
12. Main Stair
    a) Handrail
    b) Railing
    c) Finishes
13. Service Stair
    a) Handrail
    b) Railing
    c) Finishes
14. External Finishes

B. Electrical/Equipment

1. Kitchen
   a) Range Electric or Gas
   b) TV Satellite or Central TV Antenna
   c) 110V with one 220V Outlet in Every Room
   d) Dishwasher
   e) Garbage Disposer
   f) TV Outlet Location
   g) Telephone/Intercom Outlet Location
   h) Main Gate Door Opener
   i) CCTV

2
AGENDA



j) Spot Light for the House (External)
k) Type of Lighting with Dimmer
l) Garden Lights
m) Boundary Wall Lights

C. Plumbing

1. Sweet Water Tank
2. Ordinary Water Tank
3. Pressure Pump at Overhead Water Tank (Deck Roof)
4. Water Heater
   a) Individual
   b) Central

D. Mechanical (HVAC)

1. Brand
2. Type of Air-conditioning Design
3. Zoning

E. Others

1. Elevator (Brand)
2. Capacity
3. Type of Elevation
   a) Hydraulic
   b) Traction Type
4. Skylight
   a) Type
   b) Double Glazed

F. Structural

1. Type of Foundation
2. Soil Bearing Capacity

ENDA

Source: Interviewee A8 (2010) [Architectural project check list]

arab news

'50,000 engineers not accredited'

DAMMAM: ARAB NEWS

The Saudi Council of Engineers has said that 50,458 engineers working in Saudi Arabia are still not accredited with the council.

This translates to only 119,542 of the 30,000 Saudis and 140,000 foreign nationals working in the Kingdom being professionally accredited. The professional accreditation regulation was finally approved by the commission to avoid forgery of engineering certificates both within and outside the country.

Accordingly, all engineers and employees of the engineering profession in the Kingdom must professionally register with the commission.

The objective behind registration is to assess academic qualifications and practical experience of those working in the profession and to help continuously evolve and develop skills of engineers and the engineering profession. Additionally, the commission is looking to create a professional record for each engineer to document their qualifying status and professional experience.

The engineer must acquire a particular number of occupational points in the three years after obtaining a professional degree: 80 points for an engineering degree, 60 points for assistant engineer, 60 points for professional engineer, and 50 points for consultant engineer.

By granting accreditation, the commission aims to reduce cases of fraudulent certifications, especially foreign certificates, following the detection of numerous fraudulent cases by the commission in the past few years.

The classification and accreditation process will make the commission a platform for the work of engineers while reducing faltering projects and poor and inefficient engineering work. The commission is functioning in cooperation with several universities outside the Kingdom to adopt new regulations to help verify the certification presented to the commission for accreditation.

Dr. Ghazi Al-Abbasi, secretary-general of the commission, noted that professional accreditation and the engineering job structure will provide efficiency in the field of engineering and will help eliminate stalled projects as a result of poor performance and lack of regulations.

At least three cases of forged certificates were detected daily on average last year.

About 1000 forged engineering certificates were expected to be caught by the end of the year. With new regulatory efforts, the commission hopes to reduce this number significantly, as well as prevent people with fake certificates from practicing the profession and informing authorities about such cases, he said.

According to Al-Abbasi, the commission will also support engineers by sending them to training workshops and by offering programs in various regions of the Kingdom in collaboration with accredited training bodies.

Source: ArabNews, 2013. 50,000 Engineers not Accredited. *Arab News*, p.www.arabnews.com/news/465768.

Saudi women engineers have proved their expertise in design and implementation and are attracting several projects.

JEDDAH: ARAB NEWS
Published — Tuesday 1 October 2013

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arab news

Saudi female engineers enter labor market

JEDDAH: ARAB NEWS

The private sector is beginning to attract the first generation of Saudi female engineers who have graduated from various engineering faculties within the Program of the Custodian of the Two Holy Mosques for Scholarship and Private Universities.

The entry of female engineers coincides with the launch of engineering specialties for girls at Saudi government universities, an initiative which was first launched at King Abdulaziz University in Jeddah.

Fahad Moeminah, a member of the Youth Committee in the Jeddah Chamber for Commerce and Industry, said engineering and décor companies are hiring female Saudi engineers with prior experience, as well as fresh graduates, to work on vital projects.

Moeminah said four Saudi women engineers are working on designs for a number of major projects, which will soon be launched by the Jeddah Governorate.

He said these women were able to implement 420 projects in the past 30 months.

Weam Zaki Moeminah said that she got the job she had always dreamed of following graduation. Indeed, Saudi female engineers are working alongside their Saudi male counterparts on giant projects.

Moeminah said women have an important role in adding the final touches to projects. Saudi women engineers have proved their expertise in design and implementation and are attracting several projects.

This significant demand for female workers gives women a sense of pride, satisfaction and distinction in the local market.

Source: ArabNews, 2013. Saudi Female Engineers Enter Labor Market. *Arab News*, p.www.arabnews.com/news/466353.